U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-265 381

Fiscal Year 1976/Health and Environmental Effects Research Program Abstracts

Automation Industries, Inc, Silver Spring, Md Vitro Labs Div

Prepared for

Environmental Protection Agency, Washington, D C Office of Energy, Minerals and Industry

Dec 76

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-77-004

2.

3. RECIPIENT'S ACCESSION NO.

4. TITLE AND SUBTITLE
Fiscal Year 1976/Health and Environmental Effects Research Program Abstracts

5. REPORT DATE December, 1976

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)
A. Gerard, P. Mavraganis, K. Dixon and H. Holte

8. PERFORMING ORGANIZATION REPORT NO.

9. PERFORMING ORGANIZATION NAME AND ADDRESS
AUTOMATION INDUSTRIES, INC.
VITRO Laboratories Division
14000 Georgia Ave.
Silver Spring, MD 20910

10. PROGRAM ELEMENT NO. 626

11. CONTRACT/GRANT NO. 68-01-2934

12. SPONSORING AGENCY NAME AND ADDRESS
Office of Energy, Minerals & Industry
Office of Research and Development
U.S. ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

13. TYPE OF REPORT AND PERIOD COVERED Abstracts Summary

14. SPONSORING AGENCY CODE EPA/600/00

15. SUPPLEMENTARY NOTES
This report is part of the Federal Interagency Energy/Environment Research and Development Program.

16. ABSTRACT

This report includes SSIE(Smithsonian Science Information)Abstracts pertaining to the FY 1976 Interagency Energy/Environment Research, Development and Demonstration Program being coordinated and managed by EPA's Office of Energy, Minerals, and Industry. The Abstracts are organized by major health and ecological research categories. This volume includes research being accomplished by EPA and its laboratories as well as a number of other participating agencies of the Federal Government.

Reproduced from best available copy.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
ABSTRACTS	ENERGY/ENVIRONMENT	06F
ENERGY	ENVIRONMENTAL Research	08H
ENVIRONMENTS		10A
ENVIRONMENTAL ENGINEERING	EPA PROGRAMS	13B

18. DISTRIBUTION STATEMENT Unlimited	**19. SECURITY CLASS** *(This Report)* Unclassified	**21. NO. OF PAGES** 383
	20. SECURITY CLASS *(This page)* Unclassified	**22. PRICE** PC A17 / MF A01

EPA Form 2220-1 (9-73)

☆U.S. GOVERNMENT PRINTING OFFICE: 1977—241-037/10

EPA

PB 265 381

United States
Environmental Protection
Agency

Office of
Research and
Development

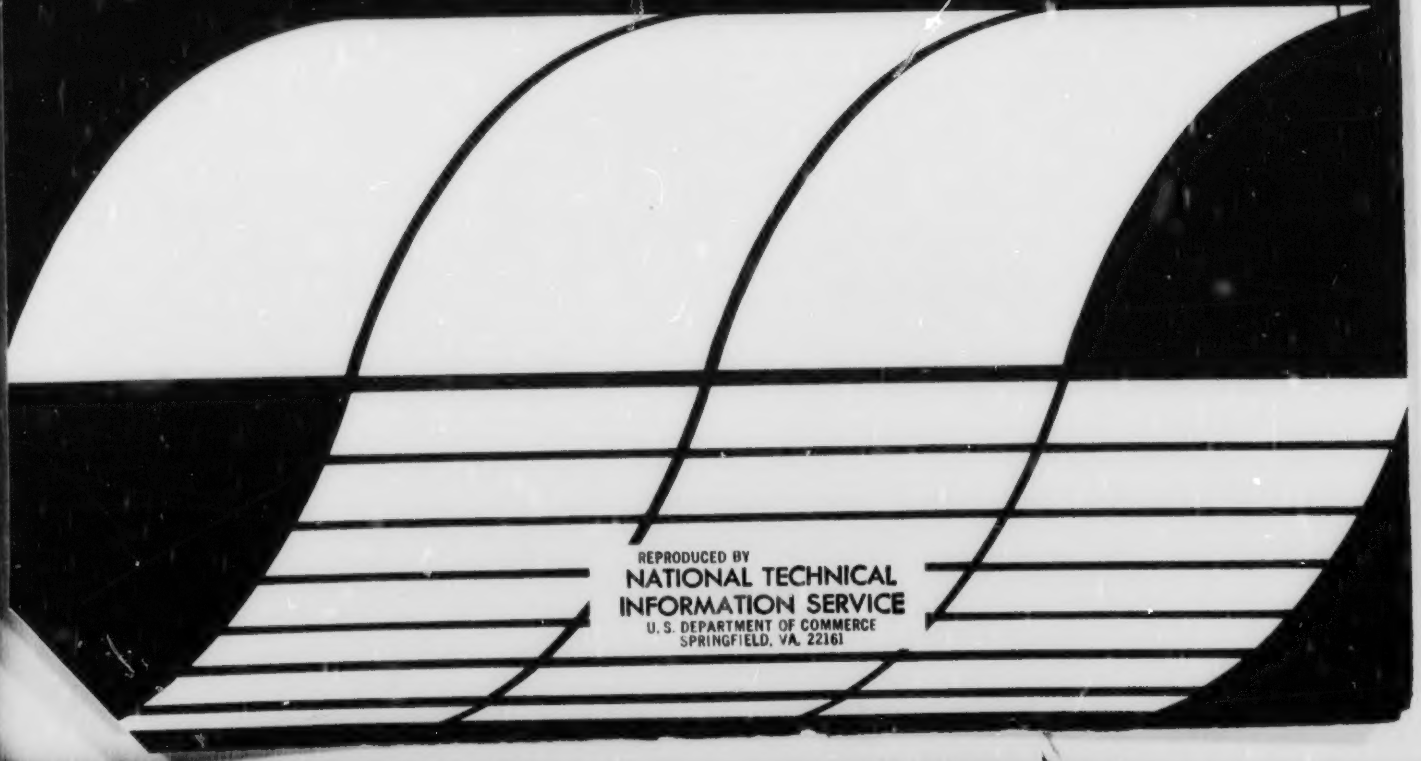
Energy
Minerals and Industry
Washington, D.C. 20460

EPA-600/7-77-004

January 1977

FISCAL YEAR 1976/HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH PROGRAM ABSTRACTS

Interagency
Energy-Environment
Research and Development
Program Report



REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

RESEARCH REPORTING SERIES

Research reports of the Office of Research and Development, U.S. Environmental Protection Agency, have been grouped into seven series. These seven broad categories were established to facilitate further development and application of environmental technology. Elimination of traditional grouping was consciously planned to foster technology transfer and a maximum interface in related fields. The seven series are:

1. Environmental Health Effects Research
2. Environmental Protection Technology
3. Ecological Research
4. Environmental Monitoring
5. Socioeconomic Environmental Studies
6. Scientific and Technical Assessment Reports (STAR)
7. Interagency Energy-Environment Research and Development

This report has been assigned to the INTERAGENCY ENERGY-ENVIRONMENT RESEARCH AND DEVELOPMENT series. Reports in this series result from the effort funded under the 17-agency Federal Energy/Environment Research and Development Program. These studies relate to EPA's mission to protect the public health and welfare from adverse effects of pollutants associated with energy systems. The goal of the Program is to assure the rapid development of domestic energy supplies in an environmentally--compatible manner by providing the necessary environmental data and control technology. Investigations include analyses of the transport of energy-related pollutants and their health and ecological effects; assessments of, and development of, control technologies for energy systems; and integrated assessments of a wide range of energy-related environmental issues.

This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

EPA 600/7-77-034
January 1977

FISCAL YEAR 1976
HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH PROGRAM ABSTRACTS

Interagency
Energy/Environment
Research and Development
Program Report

Project Officer

Richard M. Laska
Office of Energy, Minerals and Industry
Office of Research and Development
Washington, D.C. 20460

OFFICE OF ENERGY, MINERALS AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DISCLAIMER

This report has been reviewed by the Office of Research and Development, U. S. Environmental Protection Agency, and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

FOREWORD

This volume is one of two works. Together they contain project-level descriptions of nearly all of the $100-million in research and development funded by the EPA-coordinated Interagency Energy/Environment R&D Program in fiscal year 1976. This is the second year in which this office has prepared such a program listing. To make this year's effort more useful, we have coded the edges of the pages with marks. The wide marks indicate the Interagency Research category in which the project falls.

The project-level descriptions in this volume describe the health and environmental effects research funded by the FY 1976 Interagency Energy/Environment R&D Program coordinated by the Office of Energy, Minerals and Industry. Each project is assigned to one of five research, development, and demonstration categories:

- Pollutant characterization, measurement, and monitoring
- Environmental transport processes
- Health effects
- Ecological effects
- Integrated assessment

Within each R&D category, program abstracts are grouped by agency. A table of contents has been provided at the beginning of each R&D category.

Project descriptions are culled from "Notice of Research Project" forms prepared by the appropriate laboratories and agencies using the Smithsonian Science Information Exchange (SSIE) format. The enclosed tables reflect the FY 1976 Interagency Program budget. Table 1 delineates total funding by R&D category and agency. Tables 2-6 illustrate the funding for each of the five research categories. Each table (2-6) shows funding by energy source for each performing agency. Tables 7 and 8 give the funding summary by energy cycle component (extraction, processing, transportation and conversion, and utilization).

In a companion volume, similar information on environmental control technology addresses:

- Energy resource extraction
- Physical and chemical coal cleaning
- Flue gas cleaning
- Direct combustion
- Synthetic fuels

- Nuclear
- Thermal
- Improved efficiency
- Advanced systems

INDEX

CHARACTERIZATION MEASUREMENT AND MONITORING →

ENVIRONMENTAL TRANSPORT PROCESSES →

HEALTH EFFECTS →

ECOLOGICAL EFFECTS →

INTEGRATED ASSESSMENT →

ABSTRACT

This report includes SSIE (Smithsonian Science Information Exchange) abstracts to the FY 1976 Interagency Energy/Environment Research, Development and Demonstration Program being coordinated and managed by EPA's Office of Energy, Minerals and Industry. The abstracts are organized by the five major health and environmental research categories:

- Pollutant Characterization, Measurement and Monitoring
- Environmental Transport and Fate
- Health Effects
- Ecological Effects
- Integrated Assessment

This volume includes research being accomplished by EPA and its laboratories as well as a number of the participating agencies of the Federal Government.

TABLE OF CONTENTS

	Page
Foreword	iii
Index	v
Abstract	vi

I. HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH FUNDING

Table No.		Page
1	Health and Environmental Effects Research Funding by Research Category	ix
2	Characterization, Measurement and Monitoring Funding	x
3	Environmental Transport Processes Funding	xiii
4	Health Effects Funding	xv
5	Ecological Effects Funding	xvii
6	Integrated Assessment Funding	xxi
7	Percent Funds Allocation by Energy Cycle Component and Research Category	xxii
8	EPA and Pass-Through Funding Summary by Energy Cycle Component and Research Category	xxiii

TABLE OF CONTENTS
(Continued)

II. HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH

Section		Page
A	Characterization, Measurement, and Monitoring	
B	Environmental Transport Processes	
C	Health Effects	
D	Ecological Effects	
E	Integrated Assessment	

Table 1

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY ($K)

	PERFORMING AGENCY															
RESEARCH CATEGORY	EPA	TVA	ERDA	NOAA	USDA	HUD	COMMERCE	NIEHS	DOI-F&WS	FPC	NIOSH	NASA	USGS	NBS	PASS THRU TOTAL	GRAND TOTAL
Characterization, Measurement, and Monitoring	3,118.2	280	669	1,050							341	696	989	1,041	5,066	8,184.2
Environmental Transport Processes	3,150	566	652	375											1,593	4,743
Health Effects	5,447.2		2,600					2,993			1,889				7,482	12,929.2
Ecological Effects	4,150	812	1,050	1,478	1,413			179	2,293						7,225	11,375
Integrated Assessment	2,020	238	220	—	396	92	55	—	—	50	—	—	—	—	1,051	3,071
TOTAL	17,885.4	1,896	5,191	2,903	1,809	92	55	3,172	2,293	50	2,230	696	989	1,041	22,417	40,302.4

Table 2

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR CHARACTERIZATION, MEASUREMENT, AND MONITORING ($K)

		ENERGY SOURCE											
rforming gency	Laboratory and Program	Sub-Objective Statement Code	Sub-Category*	Total	Coal	Oil/ Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste as-Fuel	Conser-vation	Multi-Fuel
EPA	Las Vegas-Environmental Monitoring and Support Laboratory												
	1. Energy related western regional air monitoring	78ABF+	2A	875	775		100						
	2. Energy related water monitoring	78ABG	2A	125	100		25						
	3. Energy related groundwater monitoring and techniques development	78ABH	2A	400	150	100	150						
	4. Energy related overhead monitoring and techniques development	78ABI	2A	200	140		50	10					
	5. Energy related radiological pollutant monitoring and techniqes development	78ABJ	2A	90				90					
	6. Energy related radiological monitoring quality assurance	78ABR	2D	85				85					
	7. Remove instrumental techniques for monitoring [illegible] related pollutants and [illegible]	78ABN	2B,2C	175	125	50							
	TOTAL LAS VEGAS			(1,950)	(1,290)	(150)	(325)	(185)					
	Cincinnati - Environmental Monitoring and Support Laboratory												
	1. Energy related water monitoring techniques development	78ABM	2C	125	50		25						50
	2. Energy related water monitoring quality assurance support	78ABQ	2E	125	100		25						
	TOTAL CINCINNATI			(250)	(150)		(50)						(50)
	Research Triangle Park - Environmental Monitoring and Support Laboratory												
	1. Energy related air monitoring quality assurance support	78ABP	2D	250	220		30						
	2. Energy related air pollutant measurements and instrumentation development	78ABL	2B	420	320	50	50						
	TOTAL RTP/EMSL			(670)	(540)	(50)	(80)						
	Research Triangle Park - Industrial Environmental Research Laboratory												
	1. Design and fabrication of a service assessment sampling system		2B	165									165
	TOTAL RTP/IERL			(165)									(165)
	Athens - Environmental Research Laboratory												
	1. Energy related low level trace contaminant identification, measurement and analysis of solid waste and effluent water	78ABK	2A	115	35	40		25	15				
	TOTAL ATHENS			(115)	(35)	(40)		(25)	(15)				
	TOTAL CHARACTERIZATION, MEASUREMENT, AND MONITORING			3,150	2,015	240	455	210	15				215

+ = 225 from region VIII

Reproduced from best available copy.

Table 2

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR CHARACTERIZATION, MEASUREMENT, AND MONITORING ($K)

(Continued)

Performing Agency	Laboratory and Program	Sub-Objective Statement Code	Sub-Category*	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as-Fuel	Conser-vation	Multi-Fuel
				ENERGY SOURCE									
NIOSH	1. Develop instrumentation and devices for the measurement of hazardous agents in the occupational environment associated with energy usage (75; J. Lynch)	78BDE	2B	341	191	50						100	
	TOTAL NIOSH			(341)	(191)	(50)						(100)	
ERDA	1. Development of advanced air monitoring instrumentation and methods (75; H. R. Wasson)	78BCG	2B	315	315								
	2. Development of aqueous effluent instrumentation and methods for energy-related sources (75; H. R. Wasson)	78BCH	2C	213		70	73		70				
	3. Energy-related health instrumentation and methods development (75; H. R. Wasson)	78BCJ	2B	141	141								
	TOTAL ERDA			(669)	(456)	(70)	(73)		(70)				
NASA	1. Technical support for western energy related environmental assessment/overhead monitoring method development (75; E. L. Tilton)	78BEL	2A	550	450		50	50					
	2. Energy related remote sensing instrumentation development (75; S. P. Mufler, Jr.)	78BEU	2B	146	146								
	TOTAL NASA			(696)	(596)		(50)	(50)					
USGS	1. Water monitoring field instrumentation development (75; P. Greeson)	78BBX	2C	380	739		250						
	2. Energy related surface water monitoring/ western region (75; F. A. Kilpatrick)	78BBZ	2A	175									
	3. Energy related groundwater monitoring/ western region study (75; F. A. Kilpatrick)	78BBY	2A	125									
	4. Energy related surface and groundwater monitoring studies/western region (75; F. A. Kilpatrick)	78BBWa	2A	180									
	5. Energy related surface groundwater monitoring studies/eastern region (75; F. A. Kilpatrick)	78BBWb	2A	129	55		20						
	TOTAL USGS			(989)	(739)		(250)						
NBS	1. Energy related water pollutant analyses instrumentation (75; J. R. McNesby)	78BCK	2C,2B	250	100	50	50		50				
	2. Energy related water pollutant standard reference materials (75; J. R. McNesby)	78BCM	2D	300	175		100		25				
	3. Energy related air pollutant standard reference materials (75; J. R. McNesby)	78BCL	2D,2B	440	325		100		15				
	4. Radiological pollutant quality assurance (75; J. R. McNesby)	78BCN	2D	51				51					
	TOTAL NBS			(1,041)	(600)	(50)	(250)	(51)	(90)				

Table 2

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR CHARACTERIZATION, MEASUREMENT, AND MONITORING ($K)

(Continued)

Performing Agency	Laboratory and Program	Sub-Objective Statement Code	Sub-Category*	Total	ENERGY SOURCE								
					Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as-Fuel	Conser-vation	Multi Fuel
NOAA	1. Atmospheric and meteorological studies of pollutants from energy production (75; R. F. Pueschal)	78BEG	2B	100	100								
	2. Meteorological interpretation and prediction of air quality in the western United States related to energy activities (75; R. Machta)	78BEK	2A	205		205							
	3. LIDAR techniques for measuring particulate pollutants from energy production and their transport and dispersion processes (75; V. E. Derr)	78BEB	2A	200	200								
	4. Standardized and intercalibrated techniques for marine monitoring (75; R. J. Farland)	78BEA	2D	75		75							
	5. Ocean oil spill concentration and trajectory forecast (75; C. S. Barrientos)	78BDY	2A	150		150							
	6. Underway water sampling system (75; H. E. Rinlin Sach)	78BDX	2A	320		320							
	TOTAL NOAA			(1,050)	(300)	(750)							
TVA	1. Isolation and identification of waterborne pollutants associated with the power industry (steam electric power generation) (75; C. W. Holley)	78BDH	2A	50	50								
	2. Development and evaluation of an integrated approach to the optimization of nuclear power plant radiological surveillance programs (75; J. A. Oppold)	78BDI	2B	130				130					
	3. Synoptic monitoring of SO_2 effects on vegetation (75; T. J. Montgomery)	78BDK	2D	100	100								
	TOTAL TVA			(280)	(150)			(130)					
	TOTAL PASS THRU			5,066	3,032	920	623	231	160			100	
	TOTAL CHARACTERIZATION, MEASUREMENT AND MONITORING			8,184.2	5,047	1,160	1,078	441	175			100	183.2

---

*Sub-Categories:
2A MULTI-MEDIA MONITORING AND MONITORING TECHNIQUES DEVELOPMENT
2B AIR INSTRUMENTATION
2C WATER INSTRUMENTATION
2D QUALITY ASSURANCE

Table 3

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 78 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ENVIRONMENTAL TRANSPORT PROCESSES ($K)

ENERGY SOURCE

Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as Fuel	Conser-vation	Multi-Fuel
EPA	ATHENS LAB												
	1. Fate of specific pollutants in fresh waters	EHE-625B	3B	450	225	135	90						
	TOTAL ATHENS			(450)	(225)	(135)	(90)						
	RTP LAB												
	1. Chemical, physical and meteorological studies of energy - related pollutants in the atmosphere	EHE-625B	3A	1,485	1,114	371							
	TOTAL RTP			(1,485)	(1,114)	(371)							
	RSK LAB												
	1. Transport and fate of energy-related pollutants in ground waters	EHE-625B	3B	350	298		52						
	TOTAL RSK-ERL			(350)	(298)		(52)						
	CORVALLIS LAB												
	1. Determine transformation pathways, physical and chemical perturbation and toxicity of crude oil to fresh-water organisms in arctic lakes.	EHE-625A	3B	100		100							
	2. Determine transport pathways, transfer rates and fate of pollutants and degradation products of crude oil in soil and active layer of permafrost terrain.	EHE-625A	3D	80		80							
	3. Determine mechanisms of transformations, degradation, fate and effect of crude oil in stream ecosystems, (120K)	EHE-625A	3B	120		120							
	4. Extension of Multi-layer, two-dimensional (horizontal) model of circulation to accept a heated discharge as a pollutant	EHE-625A	3C	50	25	25							
	5. Determination of persistence and dispersion of chlorine from on-shore cooling discharges	EHE-625A	3C	50	25	25							
	TOTAL CORVALLIS			(400)	(50)	(350)							
	GULF BREEZE LAB												
	1. Determine the dynamics of dispersion and dissipation in marine and estuarine waters and the effects on marine and estuarine organisms, and long-term ecosystem impacts of waste heat and biocides derived from coastal and off-shore power plants. Develop ecosystem models of the fate and effects of thermal and biocide discharges ranging from simple planktonic assemblages to controlled field studies.	EHE-625A	3C	250	84	83		83					
	TOTAL GULF BREEZE			(250)	(84)	(83)		(83)					
	REGION VIII												
	1. Maintenance of air quality monitoring network to continue to define long term (5-year) baseline data information	EHE-625B	3A	215	190		25						
	TOTAL REGION VIII			(215)	(190)		(25)						
	TOTAL EPA			3,150	1,961	939	147	83					

Table 3

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ENVIRONMENTAL TRANSPORT PROCESSES ($K)

(Continued)

Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as Fuel	Conser-vation	Multi-fuel
				ENERGY SOURCE									
TVA	1. Evaluation of models for predicting radiological impact of gaseous releases from nuclear power plants (75; J. A. Oppollo)	78BDM	3A	50				50					
	2. Development of Simulation Models of Thermal Dispersion of fluid mechanics in streams and reservoirs (75; W. R. Nicholas)	78BDN	3B	35									35
	3. Determination of Atmospheric transport and transformation of emissions from coal-fired power plants (75; T. Montgomery)	78BDL	3A	250	250								
	4. Formation rates of inorganics of acids from strip-mines and transportation in waterways (75; W. R. Nicholas)	78BDS	3B	200	200								
	5. Determination of presence and abundance of pests and quantitative significance in selected strip mines pools (75; W. R. Nicholas)	78BDT	3B	31	31								
	TOTAL TVA			(566)	(481)			(50)					(35)
ERDA	1. Spill persistence in tundra and impacts in sub-surface arctic ecosystem (75; C. White)	78BCA	3D	72		72							
	2. Fate and effects of pollutants in terrestrial ecosystems in four corners area and Mojave Desert (75; F. B. Turner)	EHE-624C	3D	230		230							
	3. Determination of the transportation and fate of fuel wastes through soil of solid waste sites	EHE-624C	3D	130		130							
	4. Determination of organic pollutant load and dynamics of resulting refinery wastes into marine waters (75; W. Harrison)	EHE-624C	3C	70		70							
	5. Determination of the load and dynamics of oil refinery wastes in Lake Michigan	EHE-625C	3B	70		70							
	6. Evaluation of the effects of cooling towers on weather modification (75; D. H. Hamilton)	78BCD	3A	80									80
	TOTAL ERDA			(652)		(572)							(80)
NOAA	1. Transport, transformation, fate and effects of toxic metals, petroleum hydrocarbons in selected marine ecosystems (75; J. W. Townsend)	EHE-624C	3C	375									375
	TOTAL NOAA			(375)									(375)
	TOTAL PASS-THRU			1,593	481	572		50					490
	TOTAL ENVIRONMENTAL TRANSPORT PROCESSES			4,743	2,442	1,511	167	133					490

ENVIRONMENTAL TRANSPORT PROCESSES
3A ATMOSPHERIC PROCESSES
3B FRESHWATER PROCESSES
3C MARINE/ESTUARINE PROCESSES
3D TERRESTRIAL PROCESSES
3E SUMMATION OF ENVIRONMENTAL TRANSPORT PROCESSES

Table 4

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR HEALTH EFFECTS ($K)

				ENERGY SOURCE									
Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as Fuel	Conser-vation	Multi-Fuel
Cincinnati	CINCINNATI HEALTH EFFECTS RESEARCH LABORATORY												
	1. Water exposure and their effects: heavy metals and toxic organic chemicals	EHE-625F	4B	840	840								
	2. Multi-route exposures and their effects	EHE-625F	4C,4E	510.2	510.2								
	TOTAL CINCINNATI			(1,350.2)	(1,350.2)								
Research Triangle Park	RESEARCH TRIANGLE PARK - HEALTH EFFECTS RESEARCH LABORATORY												
	1. Characterize human exposure to pollutants emitted in ambient air as a result of coal conversion and utilization	EHE-625F	4D	1,300	1,300								
	2. Under controlled experimental conditions assess human exposure - effects relationships	EHE-625F	4D	777	777		125						
	3. Develop and apply cytological, biochemical, and physiological indicators of biodamage resulting from exposure to pollutants associated with energy development	EHE-625F	4A,4B 4D,4E	1,620	1,265							230	
	4. Identify the hazards of chronic, low level exposure to ^{85}K, and ^{3}H as it relates to nuclear energy production	EHE-625F	4D	400				400					
	TOTAL RTP			(4,097)	(3,342)		(125)	(400)				(230)	
	TOTAL EPA			5,447.2	4,692.2		125	400				230	

Table 4

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR HEALTH EFFECTS ($K)
(Continued)

Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	ENERGY SOURCE Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste-as Fuel	Conser-vation	Multi-Fuel
NIOSH	OCCUPATIONAL HEALTH EFFECTS RESEARCH ASSOCIATED WITH ENERGY TECHNOLOGIES AND CONSERVATION MEASURE (75;)	77BCX	4B 4C,4D	1,889	700							1,189	
	TOTAL NIOSH			(1,889)	(700)							(1,189)	
NIEHS	1. Identify effects on cells and cell components resulting from pollutants from energy technologies (75; L. G. Hart)	78BCU	4C	350									350
	2. Dose effect relationship for physiological effects of toxic agents in energy technologies (75; R. L. Dixon)	77BCR	4A	525									525
	3. Develop and test models and concepts for extrapolation of cellular and animal data to man using toxic agents from energy technologies (75; D. G. Hoel)	77BCT	4C	350									350
	4. Determine dose effects of exposure to mutagenic agents associated with energy technologies (75; F. DeSerres)	77BCS	4A	403									403
	5. Assess the metabolism, rate, and toxicology of particulates and organic compounds associated with energy technologies (75; L. G. Hart)	77BCQ	4C	306									306
	6. Develop physiological indicators of damage from toxic agents (75; F. DeSerres)	77BCO	4A	753									753
	7. Mechanisms of incorporation, metabolism, deposition, and turnover of energy related hazardous materials (75; R. L. Dixon)	77BCP	4B	306									306
	TOTAL NIEHS			(2,993)									(2,993)
ERDA	1. Identify the most potent carcinogens, mutagens, teratogens, and physiologically detrimental agents in process streams products and by-products and effluents from major fossil fuel extraction and conversion technologies (75; C. E. Stapleton)	78BAN	4A	663	696								1,904
	2. Develop cytological and biochemical indicators to estimate toxicity from oil and coal extraction, conversion, and utilization (75; C. D. Dudo)	78BAO	4A	1,065									
	3. Determine effects and organ distribution of hazardous trace metals and polycyclic hydrocarbons associated with coal and oil shale extraction, conversion, and utilization (75; H. Schulman)	78BAP	4B	316									
	4. Assess the hazards of trace and heavy metals of non-nuclear energy technologies using chromosome abberation, isozyme patterns and teratogenic effects on mammalian embryos as indicators (75; D. R. Parker)	78BAQ	4C	556									
	TOTAL ERDA			(2,600)	(696)								(1,904)
	TOTAL PASS-THRU			7,482	1,396							1,189	4,897
	TOTAL HEALTH EFFECTS			12,869.2	6,028.2		125	400				1,419	4,897

4A IDENTIFICATION OF HAZARDOUS AGENTS
4B DOSE AND DAMAGE INDICATORS
4C METABOLISM OF HAZARDOUS AGENTS
4D EVALUATION OF HAZARDS TO MAN
4E DAMAGE, REPAIR, AND RECOVERY PROCESSES
4F SUMMATION OF HEALTH EFFECTS

Table 5

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ECOLOGICAL EFFECTS ($K)

				ENERGY SOURCE									
Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste as-Fuel	Conser-vation	Multi-Fuel
EPA	NARRAGANSETT												
	1. Development of Models for Comparison of Pollutant Impact on Population Dynamics of Fishes	EHE-625A	5C	60								–	60
	2. Determination of Acute and Chronic Toxicological Effects on Marine/Estuarine Organisms and Ecosystem Impacts of Pollutants from Petroleum Extraction and Discharges from Refineries and Fossil-Fueled Power Plants		5C	985		985							
	3. Determination of Thermal Effects on Marine Organisms and by Synergism With Metals		5C	100							–		100
	TOTAL NARRAGANSETT			(1,145)		(985)					–		(160)
	CORVALLIS												
	1. Determination of the Immediate and Long-Term Dose-Response Relationships of Pollutants on Selected Western Arid and Grassland Species from Coal and Oil Shale Processes	EHE-625A	5A	900	900								
	2. Determination of the Effects of Heat and Vapor Discharge from Cooling Systems on Local Weather		5A	50	25	20		5					
	3. Determination of the Nature, Loading, Distribution and Long-Term Effects of Crude Oil in the Gulf of Alaska Marine and Estuarine Ecosystem		5C	130		130							
	TOTAL CORVALLIS			(1,080)	(925)	(150)		(5)					
	GULF BREEZE												
	1. Determination of Toxicity to Marine Organisms of Petrochemicals and Energy Related Organic Solvents from Offshore Activities and Ocean Dumping	EHE-625A	5C	250		250							
	TOTAL GULF BREEZE			(250)		(250)							
	DULUTH												
	1. Determination of Acute and Chronic Toxicological Effects on Freshwater Organisms and Ecosystem Impacts of Pollutants and Complex Effluents Released by Coal and Oil Shale Processes	EHE-625A	5B	1,175	992		183						
	2. Determination of Long-Term Effects on Waste Heat in the Surface Waters of the Great Lakes Basin on Aquatic Species and Community Populations		5B	90	45			45					
	TOTAL DULUTH			(1,265)	(1,037)		(183)	(45)					
	REGION VIII												
	1. Development of a comprehensive information profile for major freshwater aquatic environments that could be affected by energy development. This will be done through a number of resource specific biological studies.	EHE-625A	5B	110	88		22						
	2. Development of ambient sampling procedure at geothermal sites. Identification, quantification of air pollutants, water discharges and noise levels will be made.		5B	40					40				
	3. Assessment of environmental impacts resulting from energy resource development. These will include land use, water and air quality.		5A/5B/5C	125	125								
	4. Assessment of the impacts of expansion of the uranium industry.		5B	135				135	(40)				
	TOTAL REGION VIII			(410)	(213)			(135)					
	TOTAL EPA			4,150	2,175	1,385	205	185	40				160

Table 5

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ECOLOGICAL EFFECTS (5E)

Continued

Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste as-Fuel	Conser-vation	Multi-Fuel
				ENERGY SOURCE									
ERDA	1. Effects of Oil Spills on Tundra and Thaw Ponds	EME-625A	5A/5B	55		55							
	2. Effects of Construction Operations of Alaska Pipeline on Aquatic Habitats	EME-625A	5B	60		60							
	3. Effects of Trace Metals on Crop and Forest Ecosystem (75; D. Ballantine)	78BCC	5A	250							—		250
	4. Biological Indices of Pollutant Effects on Freshwater Ecosystems (75; C. C. Coutant, Primary Investigator)	EME-625A	5B	200							—		200
	5. Long-Term Effects of Hydrocarbons on Selected Ecosystems and Associated Organisms	EME-625A	5B/5C	250							—		250
	6. Surveys on Oil Extraction and Transport and Related Effects on Coastal Ecosystems (75; J. Alanton)	76BCF	5C	235		235							
	ERDA TOTAL			(1,050)		(350)					—		(700)
TVA	1. Relationships of Atmospheric Pollutants (SO_x + NO_x) from Coal Fired Power Plants on Terrestrial Ecosystems (75; T. J. Montgomery)	78BDO	5A	490	490								
	2. Thermal Effects from Mechanical Draft Cooling Towers on Vegetable and Soils (75; T. J. Montgomery)	78BDP	5A	75							—		75
	3. Thermal Impacts on Freshwater, Shellfish, Insects and Other Biota (Organisms) (75; W. R. Nicholas)	78BDM	5B	247							—		247 (322)
	TVA TOTAL			(812)	(490)						—		45
NIEHS (HEW)	1. Intake of Metals by Marine Organisms		5C	45							—		45
	2. Compare Pharmacokinetics and Toxicity in Mammals of Metals Consumed in Diet through Shellfish vs. Drinking of H_2O		5B/5C	45							—		45
	3. Synergistic Action of Temperature With Other Pollutants Marine Species (Vertebrate and Invertebrate) Marine Species		5C	45							—		(135)
	4. Relationship Between Toxic Fractions of Crude Oil and Petroleum Products and Tumor Formation in Marine Species (Dr. Larry Hart)		5C	44		44							
	NIEHS (HEW) TOTAL	77BCV		(179)		(44)					—		
USDA FOREST SERVICE	1. Assess Quality of Water in Strip-Mined Areas as it Relates to Habitat for Aquatic Organisms and Wildlife Species Associated with these Water Bodies												
	2. Assess the Redevegetation and Stabilizing of Mine Spoils and Identify Technologies that will Enhance Water Quality for Associated Aquatic Life	78BED		583	583								
	3. Assess Effects of Mining-Related Transportation Systems in Water, Air, Soil, Plant, Animal and Aesthetic Resources		5A/5B/5C										
	4. Develop Operational Technical Information System for Reclamation of Lands Affected by Mining (75; E. L. Barrows)												
	FOREST SERVICE TOTAL			(583)	(583)								

Table 5

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ECOLOGICAL EFFECTS (5E)

(Continued)

Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	ENERGY SOURCE									
				Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste as-Fuel	Conser-vation	Multi-Fuel
DEPARTMENT OF INTERIOR-FISH AND WILD LIFE SERVICE	1. Summarize Results of Laboratory Experiments and Field Observations to Evaluate the Physiological, Toxicological and Ecological Effects of Oil Primarily on Ducks. (75; L. F. Stickel)	EHE-625A	5C	350		350							
	2. Describe Effective Guidelines and Methodology for the Development, Synthesis, Analysis and Interpretation of Complex Ecological and Biological Information Relative to Major Coastal Ecosystems. (75; R. Tait)	EHE-625A	5C	300		300							
	3. Prepare Reports on Three Coastal Regions Subject to Energy Development. Place Emphasis on Value of Resources such as Fish, Wildlife and Ecological Processes Subject to Man-Induced Environmental Alternatives. (75; R. Tait)	EHE-625A	5C	300		300							
	4. Identify and Demonstrate a Rapid, Cost-Effective and Reliable Method of Inventorying and Characterizing Wildlife Habit. Special Emphasis being Placed on Requirements for Food, Cover, Breeding and Other Critical Factors. (75; R. E. Stewart, Jr.)	EHE-625A	5A	700	700								
	5.[a] Determine Water Quantity Requirements of Fish and Wildlife in the Upper Colorado and Upper Missouri River Basins.	EHE-625A	5B	150							–		150
	6.[a] Develop In-Stream Flow Methodologies to Determine Flow Requirements for Biological/Fisheries Stability in Areas Affected by Increased Energy Development—Both East and West.	EHE-625A	5B	250							–		250
	7.[a] Develop Mechanism to Identify and Monitor the Activities of Endangered Species in Areas Under Stress from Energy Development.	EHE-625A	5A	243							–		243
	DEP MENT OF INTERIOR-FISH AND WILDLIFE TOTAL			(2,293)	(700)	(950)							
NOAA	1. Co Environmental Assessment of Nort rn Puget Sound and Strait of Juan de Fuca. (75; H. S. Harris)	78AEN	5C	600		600							
	2. Develop Predictive Capability for Impacts of Petroleum-Related Activities On Northern Puget Sound and Strait of Juan de Fuca. (75; D. A. Wolfe)	78BEM	5C	320		320							
	3. Perform a Comparison/Analysis of an Existing Marine Ecosystem Under Stress of an Active Oil Field with a Similar Ecosystem in an Undisturbed Area. (75; D. Ancelovic)	78BED	5C	455		455							
	4. Design, Establish, Operate, Evaluate and Refine a Data Management System for Interagency Energy-Related Marine and Meteorological Programs (75; R. E. Wyatt)	78BGE	5C	103		103							
	NOAA TOTAL			(1,478)		(1,478)							
	TOTAL PASS THRU			7,325	2,603	2,822							
	TOTAL ECOLOGICAL EFFECTS			11,375	4,778	4,307	205	185	60				994.5

[a] Arbitrarily assigned without consulting pass-thru agencies.

ECOLOGICAL EFFECTS
5A TERRESTRIAL ECOSYSTEM EFFECTS
5B FRESHWATER ECOSYSTEM EFFECTS
5C MARINE/ESTUARINE ECOSYSTEM EFFECTS
5E SUMMATION OF ECOLOGICAL EFFECTS

Table 5

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR ECOLOGICAL EFFECTS ($K)

Continued

					ENERGY SOURCE								
Performing Agency	Project Description	Sub-Objective Statement Code	Sub-Category	Total	Coal	Oil/Gas	Oil Shale	Nuclear	Geo-thermal	Solar	Waste as-Fuel	Conser-vation	Multi-Fuel
AGRICULTURAL RESEARCH SERVICE	1. Develop Reclamation Plan Before Mining Operation Begins. (75; H. L. Barrows)		5A	105									
	2. Determine Effect of Strip-Mining and Reclamation Processes on the Quality and Quantity of Water Leaving the Area.	78BEI	5B	330	330								
	3. Determine Effect of Strip-Mine Reclamation Practices on the Nutritional Quality of Forages or Other Crops Grown on Reclaimed area.		5A	8									
	AGRICULTURAL RESEARCH SERVICE TOTAL			330	330								
COOPERATIVE STATE RESEARCH SERVICE	1. Assess and Model Effects of Previous Mining Methods, Spoil Characteristics and Reclamation of Surface and Groundwater.	EHE-625A	5B	100	100								
	2. Conduct Experiments on Plants of Fast Growing Trees to Assess Growth Support Capabilities of Specific Sites in Relation to Water Quality and Spoil Characteristics.	EHE-625A	5A	75	75								
	3. Expand Existing "Resources Inventory, Information Management and Monitoring Systems" for Collection, Assimilation and Analyses of Natural Resources and Pollution Data Related to Coal Extraction. (75; S. Aldrich)	EHE-625A	5A/5B	50	50								
	4. Evaluate Species and Seed Sources for Revegetation of Energy Resource Extraction Areas with Native Plants.	EHE-625A	5A	100	100								
	5. Determine Soil Characteristics Developing on Spoils of Varying Ages Relating to Root Growth and Biological Productivity.	EHE-625A	5A	150	150								
	COOPERATIVE STATE RESEARCH SERVICE TOTAL	EHE-625A		475	475								
	USDA TOTAL	EHE-625A		(1,413)	(1,413)								

Table 6

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY SOURCE
FOR INTEGRATED ASSESSMENT ($K)

PERFORMING AGENCY	OFFICE AND PROGRAM	SUB-OBJECTIVE STATEMENT CODE	SUB-CATEGORY	TOTAL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEO-THERMAL	SOLAR	WASTE AS-FUEL	CONSER-VATION	MULTI-FUEL
				ENERGY SOURCE									
	OEMI (Office of Energy, Minerals and Industry)												
EPA	1. Western Energy ITA Support	EHE-624C	7C	430	250								180
	2. Electrical Utilities ITA Studies	EHE-624C	7C	435									435
	3. Ohio Basin Study	EHE-624C	7B	650	500								150
	4. Advanced Coal Systems	EHE-624C	7B	60	60								
	5. Industrial Energy ITH	EHE-624C	7B	120									120
	6. Region 8	EHE-624C	7B	50									30
	TOTAL OEMI			(1,745)	(810)								(935)
	OMTS (Office of Monitoring and Technical Support)												
	1. SEAS	EHE-624C	7A	150									150
	2. Geothermal Assessment	EHE-624C	7B	125					125				
	TOTAL OMTS			(275)					(125)				(150)
	TOTAL EPA			2,020	810				125				1,085
	PASS-THRU												
USDA	1. Socioeconomic/Cultural Support Studies	EHE-624C	7C	396	356	40							54
	TOTAL USDA			(396)	(356)	(40)							53
TVA	1. Economic Forecasts (75; Rymote)	78BDU	7A	54									131
	2. Residual Forecasts (75; D. H. Walters)	78BDV	7A	53									(238)
	3. Computer Graphics (75; H. R. Hickey)	78BDW	7A	131									220
	TOTAL TVA			(238)									(220)
ERDA	1. L/R/B Study of Western Energy	EHE-624C	7A	220									92
	TOTAL ERDA			(220)									(92)
HUD	1. Building Energy Conservations Studies	EHE-624C	7C	92									50
	TOTAL HUD			(92)									(50)
FPC	1. Support of Electric Utility IT-A	EHE-624C	7C	50									55
	TOTAL FPC			(50)									(55)
DEPT. OF COMMERCE	1. Support of Electric Utility ITA	EHE-624C	7C	55									655
	TOTAL COMMERCE			(55)									1,740
	TOTAL PASS-THRU			1,051	356	40							
	TOTAL INTEGRATED ASSESSMENT			3,071	1,166	40			125				

INTEGRATED ASSESSMENT
7A METHODOLOGY DEVELOPMENT
7B INTEGRATIVE ANALYSIS
7C SUPPORTIVE RESEARCH
7X SUMMATION OF INTEGRATED ASSESSMENT

Table 7

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM FUNDING SUMMARY BY ENERGY CYCLE COMPONENT

Sub-Category	Energy Cycle Component			
	Extraction	Processing Transportation, Conversion	Utilization	Total
Characterization, Measurement and Monitoring	9.5	3.3	7.5	20.3
Environmental Transport Processes	2.3	3.9	5.6	11.8
Health Effects	7.7	11.5	12.9	32.1
Ecological Effects	9.1	10.5	8.6	28.2
Integrated Assessment	3.8	2.2	1.6	7.6
	32.7	31.4	36.2	100.0

---

* Data expressed as percentages of the total Interagency Energy/Environment FY 1976 funding for the Processes and Effects Program ($39,564,200)

Table 8

OFFICE OF ENERGY, MINERALS, AND INDUSTRY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

FY 76 INTERAGENCY ENERGY/ENVIRONMENT PROGRAM
FUNDING SUMMARY BY ENERGY CYCLE COMPONENT

	Energy Cycle Component											
	Extraction			Processing, Transportation, Conversion			Utilization			Total		
Sub-Category	EPA	Pass Thru	IAG Program	EPA	Pass Thru	IAG Program	EPA	Pass Thru	IAG Program	EPA	Pass Thru	IAG Program
Characterization, Measurement and Monitoring	1,455	2,374.5	3,829.5	508	828.5	1,336.5	1,127.2	1,891	3,018.2	3,090.2	5,094	8,184.2
Environmental Transport Processes	535	381	916	825	762	1,587	1,790	450	2,240	3,150	1,593	4,743
Health Effects	1,310	1,808.2	3,118.2	1,945	2,688	4,633	2,208	2,970	5,178	5,463	7,466.2	12,929.2
Ecological Effects	1,316	2,341.2	3,657.2	1,525	2,713.7	4,238.7	1,251	2,228.1	3,479.1	4,092	7,283	11,375
Integrated Assessment	1,292	242	1,534	364	525	889	364	284	648	2,020	1,051	3,071
	5,908	7,146.9	13,054.9	5,167	7,517.2	12,684.2	6,740.2	7,823.1	14,563.3	17,815.2	22,487.2	40,302.4

A. CHARACTERIZATION, MEASUREMENT AND MONITORING

TABLE OF CONTENTS

Characterization, Measurement and Monitoring

Agency	Page
EPA	1-43
ERDA	44-52
NASA	53-54
NBS	55-66
NOAA	67-82
TVA	83-85
USGS	86-112

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CAA

TITLE OF PROJECT
QUALITY ASSURANCE IN SUPPORT OF ENERGY RELATED MONITORING ACTIVITIES IN THE WESTERN U.S.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. P. Parry
M. Cher
G. Colovos
L. S. Shepard

NAME AND ADDRESS OF APPLICANT INSTITUTION
Rockwell International Air Monitoring Center
2421A West Hillcrest Drive
Newbyry Park, CA 91320

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Task I - Laboratory and site inspection, evaluation and reporting.
Task II - Performance surveys in which blind samples and calibration equipment are shipped to the laboratories to evaluate sample analysis and calibration performance.
Task III - Technical assistance to the various laboratories.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE August 20, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☑ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 1	PROJECT OFFICER Machta RESPONSIBLE ORGANIZATION EPA, Research Triangle Park NC

FUNDS OBLIGATED 1,260,295	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 7/13/76	ESTIMATED COMPLETION DATE 7/12/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Provide QC Samples to the Quality Assurance Branch

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Not awarded to date.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Not awarded to date.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective

Produce reference quality control samples in such areas as (1) trace metals, (2) turbidity, (3) nitrates and fluorides, and (4) organic compounds.

2. Approach:

The contractor shall produce quality control samples according to exact instructions submitted by the Quality Assurance Branch, EMSL-Cincinnati.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Not awarded to date

DATE
9-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Edward L. Berg X7326

RESPONSIBLE ORGANIZATION
EMSL-Cincinnati

FUNDS OBLIGATED
$63,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
Three

STARTING DATE
9/29/76

ESTIMATED COMPLETION DATE
9/29/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

TITLE OF PROJECT
Analytical Services for Quality Assurance Branch, EMS Laboratory

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Elaine Moore

Laboratory Operations Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION
LFE Environmental Analysis Laboratories
2030 Wright Avenue
Richmond, CA 94804

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provide analysis services for the Quality Assurance Branch of EPA, Cincinnatti, OH over a three (3) year period.

Analyses will be performed on water samples (on a fixed - fee basis) for any of ~150 chemical parameters.

Analyses will be performed in accordance with EPA's recommended methods.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* n/a
Commercial Laboratory

SIGNATURE OF PRINCIPAL INVESTIGATOR Elaine Moore

DATE 7 May 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☑ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER T.C. Covert

RESPONSIBLE ORGANIZATION EPA, EMSL, Cincinnati Ohio

FUNDS OBLIGATED 45,000

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 4/29/76

ESTIMATED COMPLETION DATE 4/29/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

TITLE OF PROJECT
Production of Quality Control Samples

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Pete Atkins, President

NAME AND ADDRESS OF APPLICANT INSTITUTION
Environmental Control Technology, Inc.
3983 Research Triangle Park
Ann Arbor, MI 48104

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective:

   To produce a series of water quality control samples.

2. Approach:

   The contractor prepares 5,000 sets of demand, trace metal, and nutrient quality control samples according to exact instructions supplied by the Quality Assurance Branch.

3. Progress

   The project is 90% completed. Most of the samples have been received and verified by referee laboratories. Current plans are to continue production for the next five years.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Mr. Pete Atkins	9-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	1	Edward L. Berg 684-7326
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$13,314	76	Five	10-15-75	12-13-76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Guidelines for Sampling & Sample Preservation of Waters/Wastewaters

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Chuck Hansen, Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

Envirex, Inc.
5103 W. Beloit Road
Milwaukee, WI 52001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective:

   Development of Guidelines for Sampling and Sample Preservation of waters/wastewaters.

2. Approach:

   The Contractor developed Guidelines for Sampling and Sample Preservation of waters/wastewaters based upon an extensive literature review and questionnaires submitted to field personnel.

3. Progress:

   The contractor submitted a final report which is currently undergoing publication in the EPA series. Current plans are to update the manual from year to year.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Mr. Chuck Hansen	DATE 9-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 2

PROJECT OFFICER Edward L. Berg 684-7326

RESPONSIBLE ORGANIZATION

FUNDS OBLIGATED $7,924	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. Five	STARTING DATE 6-23-74	ESTIMATED COMPLETION DATE 6-28-81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

TITLE OF PROJECT
Provide Technical Services to the Quality Assurance Branch-EMSL-Cincinnati

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Dick Wrobel, Eastern Operation Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION

Bionetics Corp., 18 Research Drive, Hampton, Virginia 23666

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective:

The Technical Services group shall support the activities of the Quality Assurance Branch, EMSL-Cincinnati in such areas as: (1) production of energy related quality control samples, (2) Development of Guidelines for Sampling and Sample Preservation of Water/wastewaters, and (3) Development of a computerized interlaboratory quality control program.

2. Approach:

The Technical Services Group comprised of the laboratory director, two chemist, chemical engineer, computer programmer, and clerk typist, shall conduct studies according to task assigned.

3 Current Plans:

The laboratory shall be located in Cincinnati, Ohio. Expected Date of award of this contract is 9/29/76

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Not awarded to date	9-17-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1,2,3

PROJECT OFFICER Edward L. Berg X7326

RESPONSIBLE ORGANIZATION EMSL-Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$76,714	76	Five	9/29/76	9/29/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Provide Referee Laboratory Service To The Quality Assurance Branch- EMSL - Cincinnati

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

ENCOTEC- Philip Simon, Project Manager
LFE- Elaine Moore, Project Manager
MRI- Dr. John Going, Project Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION

MRI- 425 Volker Blvd. Kansas City, MO. 64110
ENCOTEC- 3983 Research Park Dr. Ann Arbor, MI 48104
LFE- 2030 Wright Avenue, Richmond, California 94804

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: To provide quantitative analytical services for the purpose of verifying that Quality Control Samples prepared by other contractors and in house are within predetermined acceptance limits.

APPROACH: Three outside laboratories have been selected to provide quantitative analytical services for either organics or in organic water/wastewater parameters.

CURRENT PLAN: Quality Control Samples produced by outside contractors or in house shall be continually sent to the referee laboratories to insure that the samples have been prepared according to specifications.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
AGENCY STAFF *(Intramural)*
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 4

PROJECT OFFICER Terry Covert 684-7326

RESPONSIBLE ORGANIZATION EMSL - Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$45,000	76	Three		

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA CBB

TITLE OF PROJECT
Technical Review Services for EPA Microbiological Manual

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. William H. Ewing

NAME AND ADDRESS OF APPLICANT INSTITUTION
P.O. Box 33276
Decatur, GA 30033

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: The Quality Assurance Branch of EMSL - Cincinnati has prepared a manual on: *Microbiological Methods for Monitoring the Environment.* Dr. Ewing, as an expert microbiologist, reviewed one section of the manual.

APPROACH: Technical review services provided by Dr. Ewing.

CURRENT PLANS: Publication of EPA manual on *Microbiological Methods for Monitoring the Environment.*

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
University of Georgia	Dr. W. H. Ewing	[illegible]

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	[illegible]	John Winter [illegible]
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		EMSL - Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	[illegible]		[illegible]	[illegible]

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Reproduced from best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CBB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of a Municipal Digested Sludge QC Sample

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. Clark Allen, Programs Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION
Texas Instruments, Inc.
P.O. Box 5621
Dallas, Texas 75222

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) OBJECTIVE: To develop a Municipal Digested Sludge Quality Control Sample.

(2) APPROACH: A Municipal Digested Sludge Sample is collected, concentrated by centrifugation, freeze dried, sterilized, and then characterized by exhaustive chemical analyses.

(3) CURRENT PLANS: The sludge has been collected, freeze dried, and sterilized. Chemical characterization followed by verification of parameter concentrations should result in a QC Sample being available in May, 1977.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 6
PROJECT OFFICER: Edward L. Berg 684-7326
RESPONSIBLE ORGANIZATION: EMSL - Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$25,000	76	1/4	7/3/75	3/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Evaluation of the Concentrations of Plutonium in Humans Residing Near the Rocky Flats Nuclear Test Facility

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. W. Bretthauer, Chief, Methods Development and Analytical Support Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. EPA/Environmental Monitoring and Support Laboratory
P.O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: Determine if the concentration of plutonium in humans residing in the vicinity of the Rocky Flats Nuclear Facility are greater than plutonium concentrations in humans residing in areas not subjected to plutonium contamination from a nuclear facility.

Approach: Collect and perform plutonium analyses on autopsy samples collected from humans having resided within a 30 mile radius of the Rocky Flats Nuclear Facility and from humans having resided in other parts of Colorado containing no known concentrations of plutonium except that due to global fallout. Samples and epidemiological data being collected by the University of Colorado Medical School and plutonium analyses performed by McClellan Air Force Base. Also collect and analyze urine samples from study and control areas.

Current Plans and/or Progress: Plutonium analyses have been completed on lung and liver samples from approximately 50 autopsies and from 3 large urine samples. Additional analyses to be performed as samples meeting established criteria become available.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE 9/29/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER E. W. Bretthauer

RESPONSIBLE ORGANIZATION Monitoring Systems Research and Development Division, EMSL-LV

FUNDS OBLIGATED $200.0K

F.Y. 76-76T

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 0

STARTING DATE 6/1/75

ESTIMATED COMPLETION DATE 12/78

EPA Form 5760-1 (7-72) REPLACES [illegible] FORM 16A AND SSIE 26A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT Chemical and Physical Factors Affecting the Retention of Radionuclides in Soil and Rock Materials--A Critical Review

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Not yet selected--see below. Contractor is required to submit "Notice of Research Project" to EPA as part of contract obligation.

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Environmental Protection Agency, Office of Radiation Programs-Las Vegas Facility,
P.O. Box 15027, Las Vegas, Nevada 89114.
(702) 736-2969 ext. 305 FTS: 595-2969 ext. 305

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to critically review and summarize the pertinent literature and experience concerning the chemical and physical factors affecting the retention of radionuclides in soil and rock material. The emphasis is on an evaluation of the physical-chemical reactors in soil/rock which affect the retention and migration of radioactive waste materials in geologic media in a variety of climatic settings and discuss the significance of such reactions to long-term retention.

Contract proposal evaluation currently underway. Contractor selection in October 1976--expected that work will begin in November 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None	Robert F Kaufmann	Oct. 8, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Robert E. Kaufmann (702) 736-2969 ext. 291
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION U.S. EPA, ORP-LVF,
	RESEARCH GRANT		P.O. Box 15027, Las Vegas, Nevada 89114

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$75K	76	None	(Estimated) November 1976	November 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT Assessment of Environmental Impact and Analysis of Control Technologies for Radioactive Materials Associated with TH/U-233 Nuclear Fuel Cycles

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: G. L. Simmons
Science Applications, Inc.
P.O. Box 2351
La Jolla, CA 92037 (714) 459-0211

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Environmental Protection Agency, Office of Radiation Programs-Las Vegas Facility,
P.O. Box 15027, Las Vegas, Nevada 89114.
(702) 736-2969 ext. 305 FTS: 595-2969 ext. 305

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To provide the Agency with an independent summary and assessment of environmental considerations for the thorium fuel cycle, which will:

1. Describe the main features of thorium fuel cycle facilities, with primary emphasis on the HTGR cycle due to its advanced state of development, and secondary effect on the Light Water Breeder Reactor (LWBR) fuel cycle, as they relate to the potential for adverse environmental impact.
2. Identify the radionuclides of environmental and public health significance associated with thorium fuel cycle facilities and evaluate the potential for and the impact of long-term accumulation of these nuclides in the environment (e.g., carbon-14).
3. Characterize the expected operational gaseous and liquid effluents from each fuel cycle facility.
4. Describe the basic processes, design features, and effectiveness of the gaseous and liquid effluent control systems currently in use or under development.
5. Describe the costs of the gaseous and liquid radioactive effluent control technology used in thorium fuel cycle facilities.
6. Discuss the need for new effluent control technology which may be required to meet possible environmental radiation standards. (The possible standards to be considered should be equivalent to those recently proposed by EPA for the LWR fuel cycle.)
7. Compare the potential environmental impacts from normal operations of thorium fuel cycle facilities to those from comparable LWR fuel cycle facilities and characterize the significant differences.
8. Assess the environmental impact and analyze the control technology for advanced energy fuel cycles, such as mixed oxide fuels, plutonium fuel and fusion, analyze the environmental risk for each cycle.

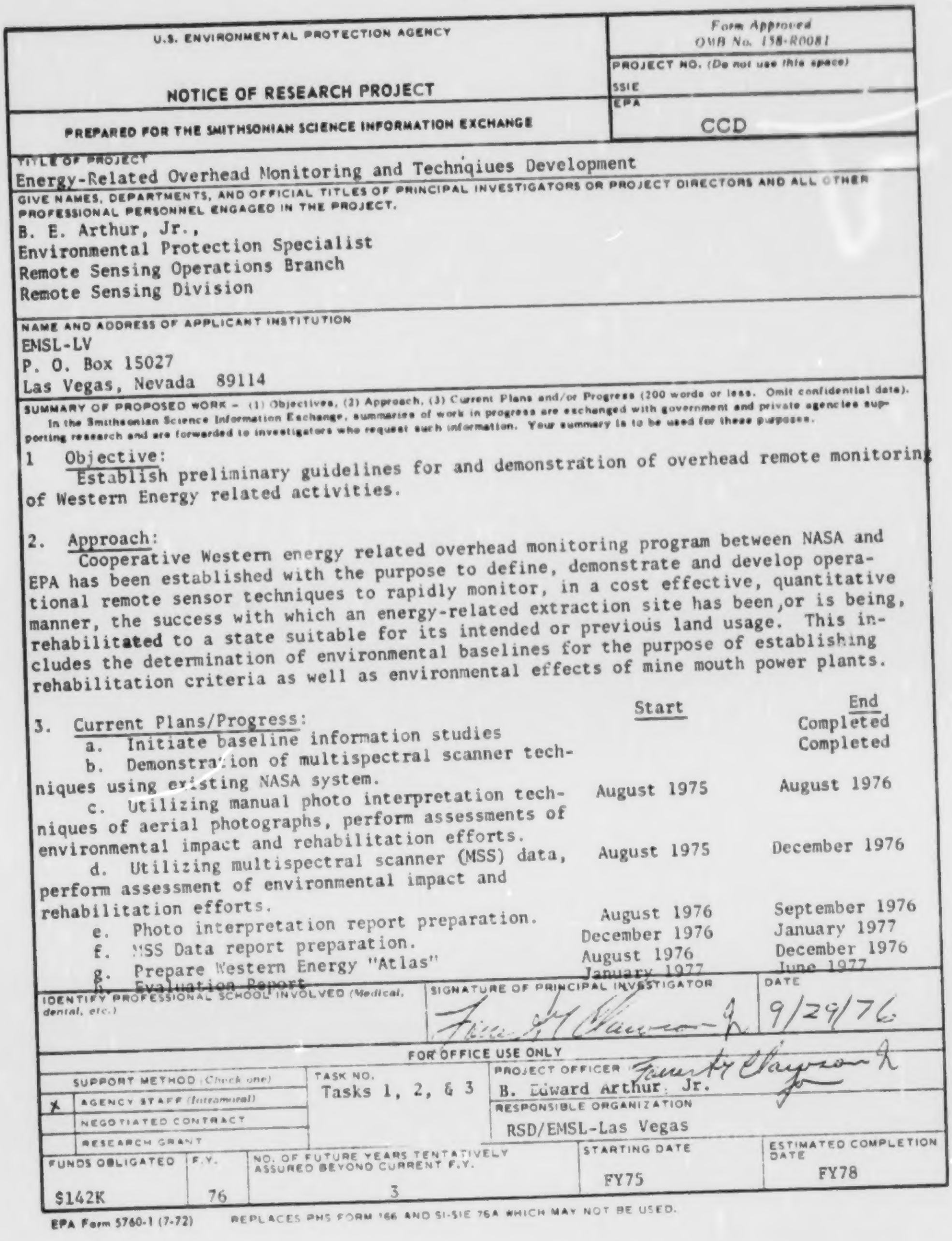
IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* None	SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas C. Lill for GLS	DATE 8Oct. 76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	1	Bruce J. Mann (702) 736-2969 ext. 305
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION U.S. EPA, ORP-LVF,
☐	RESEARCH GRANT		P.O. Box 15027, Las Vegas, Nevada 89114

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$94K	76	None	February 1976	June 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.



U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT
Energy-Related Overhead Monitoring and Technqiues Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
B. E. Arthur, Jr.,
Environmental Protection Specialist
Remote Sensing Operations Branch
Remote Sensing Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
EMSL-LV
P. O. Box 15027
Las Vegas, Nevada 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1 Objective:
Establish preliminary guidelines for and demonstration of overhead remote monitoring of Western Energy related activities.

2. Approach:
Cooperative Western energy related overhead monitoring program between NASA and EPA has been established with the purpose to define, demonstrate and develop operational remote sensor techniques to rapidly monitor, in a cost effective, quantitative manner, the success with which an energy-related extraction site has been, or is being, rehabilitated to a state suitable for its intended or previous land usage. This includes the determination of environmental baselines for the purpose of establishing rehabilitation criteria as well as environmental effects of mine mouth power plants.

3. Current Plans/Progress:	Start	End
a. Initiate baseline information studies		Completed
b. Demonstration of multispectral scanner techniques using existing NASA system.		Completed
c. Utilizing manual photo interpretation techniques of aerial photographs, perform assessments of environmental impact and rehabilitation efforts.	August 1975	August 1976
d. Utilizing multispectral scanner (MSS) data, perform assessment of environmental impact and rehabilitation efforts.	August 1975	December 1976
e. Photo interpretation report preparation.	August 1976	September 1976
f. MSS Data report preparation.	December 1976	January 1977
g. Prepare Western Energy "Atlas"	August 1976	December 1976
h. Evaluation Report	January 1977	June 1977

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE 9/29/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☒	AGENCY STAFF *(Intramural)*	Tasks 1, 2, & 3	B. Edward Arthur, Jr.
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		RSD/EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$142K	76	3	FY75	FY78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Airborne Infrared Earth Reflected Differential Absorption System for Mapping Tracer Gases

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John L. Guagliardo, Research Chemist
RSM (Remote Monitoring Methods Branch)
RSD (Remote Sensing Division)

(Subobjective Title: Energy-Related Overhead Monitoring and Techniques Development)

NAME AND ADDRESS OF APPLICANT INSTITUTION

EMSL-Las Vegas
P.O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: The objective of this project is to construct an airborne remote sensing device which will map the release of a tracer gas. The tracer will simulate the outfall of stack gases from a proposed power plant. This will aid in selection of sites for proposed power plants.

APPROACH: The approach is that two CO_2 lasers, one tuned on an absorption line of the tracer and the other tuned to a "clean" region of the spectrum, are bore sighted to a telescope which focuses down on an I.R. detector. The lasers fire downward and the telescope collects the laser pulses reflected back from the earth. The difference in the two wavelengths is related to the amount of tracers below the aircraft.

The selection of the tracer will be made based on laboratory studies and a literature survey of the environmental effects of the tracer.

CURRENT PLANS: The progress to date is that the laboratory components have been assembled and tested and the coincidences between candidate tracers and the CO_2 laser lines are now being studied. After this, plans call for the final choice of a tracer to be made based on the above information. Then the ERDAS (now configured to monitor O_3) will be modified, tested in the laboratory and field evaluated in an aircraft.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. Task 1. 7

PROJECT OFFICER John L. Guagliardo

RESPONSIBLE ORGANIZATION RSD/EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50	76	3	FY 76	FY 79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT
Development of a Two-Frequency Downlooking Airborne LIDAR System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
John A. Eckert, Chief (Subobjective Title: Energy-Related Overhead Monitoring
RSM (Remote Monitoring and Techniques Development)
RSD Methods Branch, Remote Sensing Division)

NAME AND ADDRESS OF APPLICANT INSTITUTION
EMSL-Las Vegas
P.O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: Design, construct and test a two frequency downward looking airborne LIDAR system. LIDAR systems have demonstrated capability in solving several current pollution monitoring problems, namely; 1) determining mixing layer height over large geographical areas in short periods of time, 2) determining point source plume dimensions, and 3) determining the dimensions of and structure within an urban plume.

APPROACH: The system design utilizes whenever possible, off-the-shelf components including the laser transmitter. Much of the electronics control and readout subsystem is implemented utilized microprocesser systems thus shifting the construction burden from hardware to software. Much attention is given in the design to operator interaction including a real time display system for the data.

CURRENT PLANS: The optical/mechanical design phase has been completed and the device, minus electronics components, will be delivered by January 1977. Systems design work has been completed on electronics portion of the device, however actual implementation in hardware and software will commence after flight testing of the optical system. The completed system will be operational by December 1977.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. Task 2, 6
PROJECT OFFICER John A. Eckert
RESPONSIBLE ORGANIZATION RSD/EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60	76	2	FY 75	FY 78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT Quality Assurance in Support of Energy Related Air Monitoring in the Western United States.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. E. P. Parry, Rockwell International Contract Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International
2421A West Hillcrest Drive
Newbury Park, Calif. 91320

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This work, which is being carried out by contract to Rockwell International, has as its purpose the development and implementation of a quality assurance program associated with agencies carrying out air pollution monitoring around present and proposed sources of energy in the Western United States. The Program will be carried out by providing on-site system reviews of agency air monitoring operations, establishing and operating a performance survey program and provision of technical assistance as required. The contract was awarded in July and a number of on-site system reviews have been conducted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 9-30-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
AGENCY STAFF *(Intramural)*
* NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 2

PROJECT OFFICER Steven M. Bromberg Phone: (919) 549-8411, Ext. 2196

RESPONSIBLE ORGANIZATION Quality Assurance Branch Environmental Monitoring & Support Lab/RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
222K	76	5 years	July 1976	July 1981

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy-Related Western/Southwestern Regional Air Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David N. McNelis, Deputy Director, MOD
EPA, ORD, EMSL/LV

NAME AND ADDRESS OF APPLICANT INSTITUTION
EMSL-LV, U.S EPA
P. O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. OBJECTIVE:

This project provides integrated and validated air quality monitoring data (baseline and trend) and assessment reports for western areas of the U.S. which will be most seriously impacted by energy-related development activities. Emphasis is on fine particulates, NO_x, SO_x, reactive hydrocarbons, toxic substances and visibility. The geographical coverage includes the Northern Great Plains, the Four Corners Area, oil shale areas of Colorado and Utah, the Black Mesa Area of Arizona and areas of New Mexico.

2. APPROACH – ON-GOING TASKS AT BEGINNING OF FY77

a. Maintain inventory of existing and projected Western Energy Resource Development (WERD) pollution sources, air quality and meteorological monitoring sites.

b. Maintain air monitoring network in the Four Corners general area and collect TSP and toxic substance samples. (Contract - UTE Research Laboratory)

c. Continue aircraft air quality monitoring missions in the WERD area to supplement ground-based network data.

d. Integrate air quality monitoring data and assess impact of energy related activities (Annual Report).

e. Perform quality assurance audit checks on existing energy related monitoring stations.

3. CURRENT PLANS & PROGRESS (TASKS TO BE INITIATED DURING FY77)

a. Estimate dispersion and impact of pollutants from energy-related sources in the Four Corners area.

b. Expand existing monitoring networks to include sulfate and nitrate analysis.

c. Evaluate use of dichotomous particulate samplers for airborne particulate size fractionation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		9-27-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	2	Dr. David N. McNelis
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		MOD/EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
786.5K	76	3	FY75	FY80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
CP
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Monitoring the Impact of Western Coal Strip Mining and Oil Shale Extraction on Groundwater Quality

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

See attached

NAME AND ADDRESS OF APPLICANT INSTITUTION
TEMPO-General Electric Company
816 State Street, P.O. Drawer QQ
Santa Barbara, California 93102

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary goal of this study will be to ascertain the impact of the coal strip mining and oil shale extraction and processing operations on groundwater quality in the vicinity of Gillette, Wyoming and in an area in the Uinta Basin of northeastern Utah, through establishment of a carefully designed and systematically executed monitoring program.

Simply stated, strategy will be to: (1) carefully examine and interpret the background information and data on groundwater quality, (2) inventory and prioritize the potential sources and causes of groundwater pollution, (3) evaluate mobility of pollutants from the land surface to groundwater, (4) assess the gaps and needs of the existing groundwater quality monitoring program, (5) design a monitoring program based on the identification of the existing program deficiencies and/or the inventory of potential sources and causes of groundwater pollution, (6) implement the monitoring program at the field level and monitor its operation until it is functioning smoothly enough to be turned over to the designated monitoring agency, and (7) prepare a final report on the results of the research and monitoring effort which will serve as a guide in the design and operation of groundwater quality monitoring programs for other mining locations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*: University of Arizona Department of Hydrology

SIGNATURE OF PRINCIPAL INVESTIGATOR: Richard M. Tinlin

DATE: Oct 4 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☑ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 3

PROJECT OFFICER: Donald B. Gilmore

RESPONSIBLE ORGANIZATION: EPA, EMSL, Las Vegas NV

FUNDS OBLIGATED: 592,500

F.Y.: 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.:

STARTING DATE: 9/23/76

ESTIMATED COMPLETION DATE: 9/23/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 156 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy Related Water Monitoring Data Integration

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Robert Thomas, Operational Officer, Water and Land Quality Branch
James Bliss, Physical Scientist, Water and Land Quality Branch
Lance Zeliph, Physical Scientist, Water and Land Quality Branch
David McNelis, Deputy Division Chief, Monitoring Operations Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Environmental Protection Agency
Environmental Monitoring and Support Laboratory-Las Vegas
P.O. Box 15027 Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Objectives: Establish a water monitoring net throughout the western states to monitor and assess the impact of energy resource development.

2) Approach: Through the use of computer data banks, primarily STORET, water monitoring stations that are currently in operation, back past 1970, and have reported a large number of measured parameters were selected for incorporation into a primary monitoring net. Parameters of interest were identified and a quality assurance program is being established in participating laboratories. Historical data have been reviewed and baseline water quality conditions are being established. Preparation of a Western Energy Resources Atlas is being accomplished in conjunction with a similar effort on air monitoring.

3) Current Plans: Data from the primary net stations is being augmented with data from other stations. An assessment of baseline water quality, trends, and impacts on a basin by basin basis is underway. As data gaps, either desired parameters, sampling frequency, or additional stations are identified, actions will be taken with appropriate EPA Regional Offices or other governmental agencies to correct them. The primary net will be updated periodically and extended into areas not presently addressed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE 8-27-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 3

PROJECT OFFICER
Victor W. Lambou

RESPONSIBLE ORGANIZATION
Monitoring Operations Division
EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
152 K	76	3	FY-75	FY-80 Ongoing

EPA Form 5760-1 (7-72) REPLACES PHS FORM 66 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT
Development of Techniques for Remote Monitoring of Organic Pollution in Surface Waters

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Michael Bristow, Research Environmental Engineer
RSM (Remote Monitoring Methods Branch)
RSD (Remote Sensing Division)

(Subobjective Title: Energy-Related Overhead Monitoring and Techniques Development)

NAME AND ADDRESS OF APPLICANT INSTITUTION

EMSL-Las Vegas
P.O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: The ultimate objective of this program is to develop an active airborne monitoring system capable of providing quantitative data on the organic pollutional load of surface waters.

APPROACH: The principal employed is an extension of the laboratory technique of spectrofluorometry. A water sample is irradiated with ultraviolet (UV) light of a specific wavelength and intensity and the resultant fluorescence emission is then monitored using a monochromator-multichannel detector combination. The fluorescence signal arises from dissolved organic materials both man-made and natural in origin rather from the water itself which does not fluoresce. However, the water molecule emits a Raman band which for very dilute aqueous solutions of organics, has a constant amplitude for given intensity of excitation radiation. This water Raman emission band can therefore be conveniently employed as a built in reference source with which to compare the amplitude of the concurrent fluorescence emission. The normalized amplitude of the signal then provides information concerning the concentration of the dissolved organics.

CURRENT PLANS: A number of reports have been published recently which indicate that this UV induced fluorescence emission is proportional to the Total Organic Carbon (TOC) value. It is planned to explore this relationship in more detail with the purpose of establishing a firm value for a correlation coefficient.

Based on the findings of this correlation study, an airborne laserfluorosensor will be designed, built and tested. This system will have the capability of continuously monitoring and recording the TOC value for the surface water below the aircraft.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR M Bristow	DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: Task 3

PROJECT OFFICER: Michael Bristow

RESPONSIBLE ORGANIZATION: RSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
49.8	FY 76	2	FY 75	FY 78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Characteristics and Potential Impact of Waste Waters from a Coal-Fired Power Plant...
... at Colstrip, MT.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Benjamin Wake, Administrator,
MR. M. K. Botz, Water Quality Bureau

NAME AND ADDRESS OF APPLICANT INSTITUTION
Environmental Sciences Division
Department of Health and Environmental Sciences, State Capitol
Helena, Montana 59601

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The principal effort in this investigation is to examine the production and distribution of dissolved materials in waste water ponds and subsequent movement into ground water systems. Another major objective will be to examine corrective measures that may be employed to minimize or eliminate adverse affects on ground water systems peripheral to the ponds. Ponds that will be considered include those waste ponds near the power plant and the fly ash storage pond located northwest of thecoommunity of Colstrip. The latter fly ash storage pond is a large pond used for the ultimate dipposal of fly ash. Finally, the study will evaluate the impacts on all beneficial water uses in the aeea.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
D. S. Barth

RESPONSIBLE ORGANIZATION
EPA/EMSL-Las Vegas

FUNDS OBLIGATED

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
June 1975

ESTIMATED COMPLETION DATE
June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

TITLE OF PROJECT
Evaluation of Chemical Quality of Water of Underground Mines in the North Fork of....

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. ....the Gunnison River Drainage Basin
Robert Moroen, USGS, Water Resources Div. - Colo. Dist. Off. (Principal Investigator)
J.E. Biescker, Project Supervisor (Same as above)

NAME AND ADDRESS OF APPLICANT INSTITUTION
J W. Biesecker - Denver, Colorado 80225
U.S.G.S. Water Resources Division, Colorado District Office, Denver Fed. Cent,

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this effort is to define the chemical quality of water stored in or discharged from underground coal mines in Colorado. The project will be confined to the North Fork of the Gunnison River drainage basin, primarily in Gunnison and Delta Counties. The effort will focus on development of a data base so that water quality evaluations of underground coal mining can be made. Data will be collected with respect to pH, temperature, specific conductance, dissolved oxygen, flow, and approximately 15 chemical constituents.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER D.S. Barth
☐	AGENCY STAFF *(Intramural)*	3	RESPONSIBLE ORGANIZATION EPA/EMSL-Las Vegas
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76		June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	CCD

TITLE OF PROJECT

Development of Techniques for Monitoring Vegetation Stress

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Michael Bristow, Research Environmental Engineer
RSM (Remote Monitoring Methods Branch)
RSD (Remote Sensing Division)

(Subobjective Title: Energy-Related Overhead Monitoring and Techniques Development)

NAME AND ADDRESS OF APPLICANT INSTITUTION

EMSL-Las Vegas
P.O. Box 15027
Las Vegas, NV 39114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVES: The objective of this program is to develop an airborne monitoring system capable of detecting and measuring the type and degree of vegetation stress induced in natural and agricultural vegetation by specific atmospheric pollutants such as ozone, sulphur dioxide and nitric oxide.

APPROACH: The approach which has been adapted employs the method of fluorescence spectroscopy whereby changes in the laser induced fluorescence characteristics of specific plant types will be observed before, during and after a simulated pollution episode.

The measurements will be conducted in vivo with the laser radiation tuned to excite two groups of substances in the leaf tissue, viz. the pigments responsible for photosynthesis and the overall cellular and intercellular leaf material.

Pollutant stress induced changes in the fluorescent characteristics will then be observed and recorded; these are the changes in the amplitude of the fluorescence emission, in both the excitation and emission spectra and in the fluorescence decay time.

CURRENT PLANS: The test plants will be grown in an environmental growth chamber under conditions of controlled temperature, humidity and light and into which specific concentrations of pollutant gases can be added. Groups of specific plant types will be exposed to tuned laser radiation from above in a simulated remote sensing configuration. The fluorescence emission is collected by a telescope and focused onto a monochromator whereby the dispersed radiation is detected, displayed and converted into a DC signal suitable for chart recording.

Data obtained from these measurements will then be utilized in the design of an airborne system capable of measuring these stress induced fluorescence changes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR M Bristow	DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* [✓ AGENCY STAFF *(Intramural)*] NEGOTIATED CONTRACT RESEARCH GRANT	TASK NO. Task 4 & 5	PROJECT OFFICER Michael Bristow RESPONSIBLE ORGANIZATION RSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
52	FY 76	3	FY 75	FY 79

EPA Form 5760-1 (7-72) REPLACES SSIE FORM 1A AND SSIE 1AA WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

Energy-Related Overhead Monitoring and Techniques Development

TITLE OF PROJECT Acquire from NASA and put into use the Data Analysis System (DAS) for Multispectral Information.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. R. Dockter, Electronics Systems Engineer, Remote Sensing Operations Branch, Remote Sensing Division.

NAME AND ADDRESS OF APPLICANT INSTITUTION

EMSL-LV
P.O. Box 15027
Las Vegas, Nevada 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objectives:

a. Training of EMSL-LV Remote Sensing Division personnel by NASA in the use of the automated multispectral analysis system.

b. Acquire from NASA and put into operational use the Data Analysis System.

c. Perform analysis and prepare a final report on completion of the transfer of technology.

2. Approach:

The training of EMSL-LV Remote Sensing Division personnel on the actual DAS with operational type requirements will greatly enhance the NASA to EPA technology transfer. The DAS was designed with the capability to reduce a broad range of remote sensor data and will be used to reduce the multispectral scanner and ERTS data for land use mapping and water monitoring purposes. The DAS output may be recorded on nine track digital computer compatible tape for further processing, displayed on a high resolution color television monitor, recorded on 9.5 inch wide color or black and white film, or listed on a high speed line printer. A versatile interactive operator control console is included to provide complete operator-processor communication and control.

3. Current Plans/Progress:	Start	End
a. Demonstration of technique using existing NASA system.		Complete
b. Training of EMSL-LV personnel.	October 1976	July 1977
c. Acquire complete DAS system for EMSL-LV.	June 1976	September 1977

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Marvin R. Dockter	28 Sept 76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	Tasks 4 & 5	Marvin R. Dockter
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		RSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K	FY76	3	FY75	FY80

EPA Form 5760-1 (7-72) REPLACES OHS FORM 166 AND SI SIE 166 WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Groundwater Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Leslie G. McMillion, Project officer

Donald B. Gilmore, Project officer

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Environmental Protection Agency
Environmental Monitoring and Support Laboratory, P. O. Box 15027,
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective:	To direct the research and monitor the progress of contracts under this program.
Approach:	Three groundwater basins will be studied by applying theoretically developed monitoring strategies and the results developed into guidelines for monitoring groundwater quality.
Progress:	A contract has been signed with TEMPO for an oil shale mining and processing project in the Uintah Basin, Utah and a strip coal mining area in the Powder River Basin.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NONE	SIGNATURE OF PRINCIPAL INVESTIGATOR Leslie G. McMillion Donald B. Gilmore	DATE 9/28/76

FOR OFFICE USE ONLY

	SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER D. B. Gilmore, L. G. McMillion
X	AGENCY STAFF (Intramural)	6	
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION MSD/EMSL-LV
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
54K	76	3	FY76	FY78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 16A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Groundwater Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. T. E. Larson - Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Illinois State Water Survey
P. O. Box 232
Urbana, IL 61801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To develop a statistical base for evaluating the necessary frequency of sampling and analysis for data collection designed to assure accuracy in determining short-term trends in water quality in streams and lakes. Conversely, the average percent deviations for sampling intervals greater than daily will be determined.

Approach: Daily sampling, both grab and composite, will be conducted at 6 stream sampling sites and 3 lake sites. These samples will be analyzed for 17 parameters. Data will be related to water-shed size, stream flow characteristics, physiographic features, and climatology. For lakes, the data will be related to size, depth, area, characteristics of the drainage area, and climatology.

Current Progress: Sampling has started and analyses are being made. Other than analyses data, no output is expected until the end of the project. Sampling will continue for 2 years. At the end of the sampling period, the average percent deviations will be determined from the median of the one day sampling frequency and the 10 and 90 percentiles when 2, 4, 7, 14, the 5-day work week, and the Monday, Wednesday, Friday intervals are used. Deviations from the 1-day annual daily mean will also be determined.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NONE		9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
X RESEARCH GRANT

TASK NO.
6

PROJECT OFFICER
Donald B. Gilmore

RESPONSIBLE ORGANIZATION
MSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$150K	76	1.5	9/76	3/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY	*Form Approved* *OMB No. 158-R0081*
NOTICE OF RESEARCH PROJECT	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CCD

TITLE OF PROJECT
Groundwater Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Richard Tinlin, Principal Investigator.

NAME AND ADDRESS OF APPLICANT INSTITUTION
General Electric-TEMPO
P. O. Drawer QQ
Santa Barbara, CA 93102

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Development of a groundwater monitoring model and strategy that will be applicable to any strip coal mining and oil shale mining and processing area.

Approach: Two groundwater basins will be intensively studied by applying a theoretically developed monitoring strategy and the results developed into a guideline for monitoring groundwater quality in each of the above areas.

Approximately 60% of the effort will cover groundwater in the strip coal mining area on the east flank of the Powder River Basin where there is mine-mouth power generation and railroad export and there are proposed coal gasification and liquefaction projects as well as a pipeline slurry proposal.

The remaining 40% of the effort will be in the Uintah Basin, Utah around Tracts U_a and U_b where there is a proposed mining and processing project.

Current Plans: A contract with GE-TEMPO has been executed and baseline data covering identification of all ongoing monitoring and relevant groundwater information is ongoing. A monitoring strategy is expected about 6/77 with immediate implementation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NONE		9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	6	Leslie G. McMillion
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		MSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$225K	76	3	10/76	6/81

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CCD

TITLE OF PROJECT
Groundwater Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Wayne Wyatt, Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Texas Water Development Board
Box 13087, Capitol Station
Austin, TX 78711

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective:	Validation of an EPA-developed groundwater quality monitoring strategy.
Approach:	A groundwater basin in East Texas that includes huge lignite reserves, oil and gas reserves, and major developments of these reserves will be studied. Identification of polluted areas will be made, the source identified, and the transport pathway determined. The first six steps of the monitoring strategy will be applied and the first phase of the strategy identified.
Current Plans:	The proposed contract has been forwarded to the Texas Water Development Board. This Board proposes to furnish $83K of the $138K cost of the project. Present plans exist for a continuation that will implement and operate the monitoring strategy to determine the validity of the strategy.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NONE		9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	6	Leslie G. McMillion
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		MSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$55K	76	2	10/76	11/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

TITLE OF PROJECT
Potential Radioactive Pollutants Resulting From the Expanded Program: Quality Assurance Aspects

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Robert M. Rodden
Project Supervisor: Philip J. Dolan
Project Leader: Hong Lee
Other Professionals: Thomas O. Peyton
Robert V. Steele
Ronald K. White

NAME AND ADDRESS OF APPLICANT INSTITUTION
Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To identify and document the potential radioactive pollutants that could result from the expanded energy program and for which quality assurance programs must be provided.

Approach: The research approach is to gather data on conventional and nuclear energy system facilities and operations, on the radionuclides in conventional and nuclear fuels and the releases of these radionuclides to the environment; to examine the pathways of these radionuclides to human exposures; and to compute the potential amount of the various radionuclide releases and associated hazards for a few selected plausible alternative expanded energy programs. The energy systems for which radionuclide releases will be assessed, from resource extraction to final waste disposal, include coal, shale oil, geothermal, and various nuclear systems.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR Hong Lee

DATE February 9, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) ☑ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 7	PROJECT OFFICER Jarvis RESPONSIBLE ORGANIZATION EPA, Washington, DC

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
49,700	76		1/16/76	11/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
O.MB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy-Related Radiological Pollutant Monitoring and Techniques Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. Robinson, Supervisor Radiological Surveillance Environmental Control

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. ERDA Mound Laboratory
Monsanto Research Corporation
P.O. Box 32 Miamisburg, OH 45342

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Conduct research on the development of techniques to monitor potentially hazardous effluents and emissions from nuclear fuel cycle facilities.

Approach: Develop or evaluate methods for monitoring plutonium and uranium in water and americium in soil. Recommend methods which best meet established criteria and conduct and evaluate results of interlaboratory collaborative tests of these methods. This includes the development of appropriate reference materials for calibration and analysis.

Current Plans and/or Progress: A method for measuring plutonium in water is presently undergoing collaborative testing. Efforts are underway to develop reference methods for uranium in water and americium in soils.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 9/29/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 7

PROJECT OFFICER B. Robinson, Radiological Surveillance Environmental Control

RESPONSIBLE ORGANIZATION

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$65K	76-76T	1	7/1/76	6/30/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy-Related Radiological Pollutant Monitoring and Techniques Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. W. Bretthauer, Chief, Methods Development and Analytical Support Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. EPA/Environmental Monitoring and Support Laboratory
P. O. Box 15027
Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Conduct research on the development of techniques to monitor potentially hazardous effluents and emissions from nuclear fuel cycle facilities.

Approach: Characterize the physical and chemical properties and radiation levels of plutonium and other actinide discharges from a mixed uranium and plutonium oxide fuel-fabrication facility. Recommend and collaboratively test methods for monitoring plutonium, uranium and thorium in soil, air and water, including the development of appropriate reference materials for calibration.

Current Plans and/or Progress: A tentative EPA reference method for the analysis of plutonium in soil has been developed and collaboratively tested. A second method recommended by ERDA for the analysis of plutonium in soil is currently undergoing collaborative testing. Efforts are underway to develop a reference method for the analysis of plutonium in air. Future plans are to begin the evaluation of currently available methods for measuring uranium and thorium in the environment.

The physical and chemical properties and radiation levels of plutonium and other actinide discharges are being characterized under contract from samples collected at a mixed, uranium-plutonium oxide fuel fabrication facility. Stack sampling has been completed and the samples are currently being analyzed through an Interagency Agreement with the U.S. Air Force Technical Applications Center. Environmental air, soil, and vegetation samples are also being collected and analyzed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		9/29/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	7	G. B. Morgan (702) 736-2969
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Monitoring Systems Research and Development Division/EMSL-LV
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$ 43.9K	76-76T	4	10/30/74	12/30/80

EPA Form 5760-1 (7-72) REPLACES SSIE FORM 1A AND SSIE 1AA WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CCD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy-Related Radiological Monitoring Quality Assurance

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. N. Jarvis, Chief, Quality Assurance Branch
D. G. Easterly, Chief, Intercomparison and Calibration Section
E. L. Whittaker, Chief, Monitoring Guidelines and Standardization Section

NAME AND ADDRESS OF APPLICANT INSTITUTION

USEPA/Environmental Monitoring and Support Laboratory
P.O. Box 15027
Las Vegas, Nevada 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives To develop and maintain a quality assurance program which continuously meets the needs of those laboratories having responsibility for radiation monitoring in the environs of nuclear reactors and nuclear and fossil fuel extraction and processing facilities. This includes the distribution of calibrated samples and reference materials, cross-check studies, instrument development, and the publication of instrument quality control procedures and pertinent guidelines.

Approach An ongoing radioactive standards calibration and distribution program and a laboratory intercomparison studies program have been in operation at EMSL-LV since 1972 and are continuing on schedule. However, monitoring of the exploration, development, and utilization of energy sources will require a continual and expanded need for both naturally-occurring and man-made radionuclides for use in the preparation of standard reference materials, standard reference samples, and intercomparison studies.

Current Plans/Progress Standard reference materials, calibrated samples, and guidelines required for the analysis of samples obtained by monitoring activities in the vicinity of nuclear facilities, fossil fuel extraction and utilization activities, and geothermal sites will continue to be made available.

A "state-of-the-art" beta counting system has been designed, constructed, is operational and is in the final testing stages.

Guidelines describing calibration and quality control procedures for radiation monitoring using gamma spectroscopy and liquid scintillation counting have been prepared

An IAG was negotiated with NBS for the production of 300 radium-228 standards and for studies to assure our continued traceability measurements to the NBS.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
9-28-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Internal)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
7

PROJECT OFFICER
G. B. Morgan

RESPONSIBLE ORGANIZATION
Monitoring Systems Research and Development Division/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$102.8K	76	continuing	04/01/75	Continuing

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0031

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CFA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Analysis of Aerosol Data

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr Kenneth A. Hardy
Associate Professor of Physics
Department of Physical Sciences
Florida International University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Florida International University
Tamiami Trail
Miami, Florida 33199

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The aerosol Research Branch of the Environmental Protection Agency with the assistance of the Aerosol Group at Florida International University and Florida State University collected samples of urban aerosols in Miami, St. Louis and Pittsburgh during the summer of 1975. Preliminary data generated through proton induced x-ray emission, PIXE, have been submitted to the Environmental Protection Agency for some of the samples collected during this time. This proposal is to support the reduction of this data. The analysis of the data will be done in cooperation with R. K. Patterson of the aerosol research branch. The tasks necessary for this data reduction include a) coordinate the irradiation of the remaining samples from St. Louis and Pittsburgh on the Van de Graff accelerator at Florida State University; b) Extract the elemental concentrations from the spectral data generated in a; c) Prepare plots of the elemental concentrations as a function of time or particle size, whichever is appropriate; d) Prepare reports which will attempt to explain the measured aerosol concentrations by considering available meteorological emission inventory and chemical balance data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 16 June 76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 2	PROJECT OFFICER RESPONSIBLE ORGANIZATION ESRL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
9,963	76	0	06/08/76	12/07/76

EPA Form 5740-1 (7-75) [illegible]

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CFB

TITLE OF PROJECT Aircraft Measurements in Support of Project MISTT, Midwest Interstate Sulfer Transformation and Transport

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

See Attachment #1

NAME AND ADDRESS OF APPLICANT INSTITUTION

Meteorology Research, Inc.
464 West Woodbury Road
Altadena, California 91001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the 1976 MISTT study is to extend the results of previous studies to cover larger distances from the sources and obtain more detailed knowledge of the chemical processes occurring in polluted air. The aerosol formation processes as well as gaseous plume chemistry will be the subject of continued study. Conversion rates and mechanisms identified earlier need to be verified under a variety of meteorological conditions. The aerosol chemistry of the urban and power plant plumes will be examined using new techniques which will yield information on substances other than sulfate. In addition to refining our understanding of the chemical processes, the 1976 program will attempt to better define the regional transport and accumulation mechanisms at work in the Eastern United States. The project will be expanded from the immediate St. Louis area to include the study of pollutant accumulation and transport in synoptic scale, slow moving, stable air masses.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 28 June 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Gregory D' Alessio
	AGENCY STAFF *(Intramural)*	1	
✓	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA Research Triangle Park N.C
	RESEARCH GRANT		

FUNDS OBLIGATED 194,633	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 6/18/76	ESTIMATED COMPLETION DATE 6/17/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CFB

TITLE OF PROJECT Determine the Character and Origin of Aerosols and Development of Fine Particle Methodologies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. E. Heffelfinger Chemistry Department, Associate Manager, Analytical, Physical and Atmospheric Chemistry
P. W. Jones Chemistry Department, Associate Manager, Organic Chemistry
D. Mendenhall Researcher
D. Chase Researcher

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle Columbus Laboratories
505 King Avenue
Columbus OH 43201

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objectives

The objective of the project is to provide the analytical chemistry and smog chamber studies support necessary to determine the character and origin of aerosols.

2. Approach

The approach is to apply all inorganic and organic analysis techniques necessary to characterize aerosols with regard to elements, ions, and compounds. In addition smog chamber studies will be carried out in order to illucidate the processes of formation of aerosols from gaseous products.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR R.E Heffelfinger	DATE 10/11/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	
✓	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA, ESRL, Research Triangle Park NC.
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
155,490	76		9/27/76	9/30/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CFB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Perform a Literature Survey on Present Emissions from Various Stationary Sources and to conduct Smog Chamber Studies of Emissions Found

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. J. E. Sickles, II, Project Leader, Environmental Measurements Department
Mr. C. E. Decker, Project Supervisor, Environmental Measurements Department
Dr. W. C. Eaton, Chemist, Environmental Measurements Department
Dr. L. A. Ripperton, Principal Scientist, Environmental Measurements Department
Mr. R. S. Wright, Environmental Scientist, Environmental Measurements Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Research Triangle Institute
P.O. Box 12194
Research Triangle Park, NC 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The increasing demand for energy in the face of shortages of available fuels has resulted in the emergence of new processes and technologies aimed at increasing the energy output from fossil fuels. As the requirement for energy increases, the impact of such processes on air quality must be evaluated. The operations for consideration are shale oil production, petroleum refining, and coal mining, combustion, and gasification. Conventional mobile and stationary combustion sources have been the major contributors to the photochemical pollution burden in many areas. Composition and emission rate information coupled with oxidant-forming potential from smog chamber investigations will enable EPA to assess the future impact of new energy sources on air quality.

The objectives of this investigation are:

- To perform a literature survey to gather information on composition and rates of emissions of organic, nitroxy, and sulfoxy emissions from various operations of the emerging energy technologies; and
- To conduct smog chamber studies of the atmospheric chemistry of emissions from production and refining operations related to coal and oil-shale conversion and petroleum refining.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR J. E. Sickles, II	DATE 9-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☑ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER Robert Farland

RESPONSIBLE ORGANIZATION EPA, ERSL, Research Triangle Park N.C.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
74,915	76		9/1/76	8/31/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CFB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Power Plant Plume and Sulfate Study in Complex Terrain

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
John L. Swift, Vice Pres./Office of Environmental Mgmt. (Project Manager)
Robert C. Koch, Sr. Research Scientist, Office of Environmental Mgmt.(Principal Invest.)
Douglas J. Pelton, Research Scientist, Office of Environmental Mgmt.(Director/Field Operations)
Paul H. Hwang, Research Scientist, Office of Environmental Mgmt.(Sr. Meteorologist)

NAME AND ADDRESS OF APPLICANT INSTITUTION
GEOMET, Incorporated
15 Firstfield Road
Gaithersburg, Md. 20760

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1.0 Objectives: (1) Creation of reliable data describing atmospheric behavior of sulfur oxide and nitrogen oxide emitted from a specific large power plant in complex terrain; (2) Appraisal of current knowledge of plume behavior under similar conditions; (3) Improvement of capabilities for predicting such behavior.

2. Approach: (1) A six-month literature survey will be conducted of current knowledge of atmospheric behavior of plumes from tall stacks in complex terrain, including conservative dispersion and sulfate transformation; plus an appraisal of the adequacy of available modeling techniques for predicting such behavior. (2) Field measurements will be conducted for a year, using fixed and mobile ground plus airborne monitoring at the 700 MW coal-fired Clinch River Power Plant in the Appalachian Mountains at Carbo, Virginia Parameters observed continuously will include meteorology; NO_x and SO_x emissions: concentrations over time and space of NO_x, SO_2, sulfates and O_3 in the plume. (3) Improved modeling techniques for describing plume behavior in complex terrain and sulfate transformation will be developed upon data and the Clinch River literature survey.

3. Progress and Plans: Work began October 31, 1975. Field measurements begin June 1976 with completion May 1977. Analyses and modeling will be completed October 1977 with Final Report in early 1978.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N.A.

SIGNATURE OF PRINCIPAL INVESTIGATOR
JOHN L. SWIFT
Project Manager

DATE
December 3, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☑ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
T. Montgomery

RESPONSIBLE ORGANIZATION
EPA, Research Triangle Park, N.C.

FUNDS OBLIGATED
86,554

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
10/31/75

ESTIMATED COMPLETION DATE
6/30/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CFB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT "Quantative Chemical Analysis of Particulates by Raman Spectroscopy: Theoretical Considerations and Computations"

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Milton Kerker, Dept. of Chemicstry, Clarkson Professor

Derry D. Cooke, Dept. of Chemistry, Research Assistant Professor

Research Associate (to be appointed)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Clarkson College of Technology, Division of Research, Potsdam, New York 13676

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We propose to perform calculations, using a recently developed theory, to estimate the effect of particle size and refractive index on the Raman scattering cross sections for molecules comprising all or a constituent part of small particles. These calculations will be coordinate with experimental work at the National Bureau of Standards directed toward the analysis of molecular species contained in small particles. The numerical studies will permit extension of the present technique for qualitative analysis of particulates to a more quantitative basis, since to this point no theory has been available which predicts the dependence of the total Raman signal on particle size, shape, refractive index and orientation with respect to the illumination and collection directions. Calculations to elucidate these dependencies may also lead to estimation of the distribution of the molecular species within the particle (e.g. uniform distribution throughout the particle or concentration in a surface layer). It will also provide information which could lead to improvements in the design of the present instrumentation. Theoretical studies will be undertaken to extend the present theory to nonspherical particles and to nonuniform light sources.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Science and Engineering

SIGNATURE OF PRINCIPAL INVESTIGATOR Milton Kerker

DATE Apr 20, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☑ RESEARCH GRANT

TASK NO. 2-4

PROJECT OFFICER John Nader

RESPONSIBLE ORGANIZATION EPA, ESRL, Research Triangle Park, N.C.

FUNDS OBLIGATED 28,000

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 8/18/76

ESTIMATED COMPLETION DATE 8/17/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CJA

TITLE OF PROJECT
IDENTIFICATION OF COMPONENTS OF ENERGY-RELATED WASTES AND EFFLUENTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. E. D. Pellizzari, Senior Chemist and Project Director - Chemistry and Life Sciences Group
Dr. R. Handy, Senior Chemist - Chemistry and Life Sciences Group
Dr. R. Jeffcoat, Chemist - Chemistry and Life Sciences Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Research Triangle Institute, P. O. Box 12194, Research Triangle Park, N. C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The long term objective of the proposed research is to identify substances in wastes and effluents from energy-related processes. Information developed from this program will assist researchers who are concerned with control technology and monitoring techniques and the health and ecological effects of such energy-related pollution. The proposed work is divided into three phases. Phase A consists of a state-of-the-art summary and work planning which constitutes contacting EPA personnel to determine which energy-related solid waste and aqueous effluents have been analyzed for the purpose of identifying and measuring pollutants and which current contracts and projects will provide further identification. It will also consist of judging the reliability of existing information and the probability of accumulation of adequate data from current contracts and projects using pre-selected criteria. This information will be collated and summarized in a report for EPA. The report will identify gaps in existing and probable future data on chemical elements and volatile organic compound in solid wastes and aqueous effluents from coal mines, oil refineries, oil-shale processors, coal-fired power plants, coal liquefaction and coal gasification plants. Phase B consists of selecting sampling sites based on the recommendations from the report prepared in Phase A. The specific aims of Phase C consist of: (a) development and setup of analytical protocol, (b) qualitative and quantitative analyses for elements and organics in aqueous and solid wastes from the selected energy-related processes, and (c) the interpretation and collation of data obtained.

The proposed methods of analyses for the elements consists of flameless atomic absorption for mercury and spark source mass spectrometry for the qualitative and quantitative analysis for all elements through uranium in the periodic table of the elements excepting oxygen, helium, hydrogen, neon, krypton, zeon, radon, nitrogen, carbon and mercury. Volatile and semi-volatile organic compounds in water and solid samples will be identified primarily by gas-liquid chromatography/mass spectrometry/computer analysis

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
E Pellizzari

DATE
12/9/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1D

PROJECT OFFICER
Ann Alford
404 546-3186
Ann Alford

RESPONSIBLE ORGANIZATION
U.S. EPA
Environmental Research Lab., Athens, GA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$144 000	76	0	11/75	2/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Sulfate and Nitrate Analyses of Northern Great Plains Particulate Matter

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION
Montana Dept of Health and Environmental Sciences, Colorado Dept of Health, South Dakota Environmental Protection Department, and North Dakota Dept of Health

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An Analysis of hi-volume sampler filters at 40 sites in Colorado, Montana, North Dakota and South Dakota will be performed to determine SO_4 and NO_3 concentrations. All samples collected on an every-sixth-day basis will be analyzed for one year. The respective State Air Pollution Control Agency Lab is performing the analyses.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	1-6	Cooper H. Wayman
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☒	RESEARCH GRANT		EPA - Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$215,000	76		1975	June 30, 1977

*Funds approximate not for citation. 186 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSC

TITLE OF PROJECT
Oil Shale Area Meteorological Data Analyses

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Roger Nelson

NAME AND ADDRESS OF APPLICANT INSTITUTION
CDM Limnetics
11485 West 48th Avenue
Wheat Ridge, Colorado 80033

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Upper air meteorological data will be purchased from the National Climatic Center in Asheville, NC, for all NWS recording sites in EPA, Region VIII. The temperature, wind speed and wind direction data collected at Grand Junction, Colorado will be compared with like data obtained near the Colorado Federal oil shale lease tracts. A determination of the representativeness of obtaining upper air data for 15 days in the central portion of each quarter will be made.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1 A-1	RESPONSIBLE ORGANIZATION OEA, EPA, Region VIII, Denver
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
55 K	76	0	3/76	7/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY	*Form Approved* *OMB No. 158-R0081*
NOTICE OF RESEARCH PROJECT	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CSD

TITLE OF PROJECT

Technical Assistance in the Review and Revision of Alluvial Valley Floor Designations...at Selected Western Coal Strip Mines.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jack Schmidt

NAME AND ADDRESS OF APPLICANT INSTITUTION

State of Montana, Helena, Montana 59601

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this effort is to provide technical assistance in the review and revision of alluvial valley floor designations at selected surface coal mines in the Interior West of the United States. Appropriate background material will be obtained and reviewed. An evaluation will be made of the EPA aerial imagery program with respect to alluvial valley floorscriteria and interpretation. A report will be prepared which reviews exsisting alluvial valley floor research to date, and recommendations will be established for future research and policy.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Cooper H. Wayman
	AGENCY STAFF *(Intramural)*		
X	NEGOTIATED CONTRACT	1	RESPONSIBLE ORGANIZATION EPA-Region 8
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
CSD

TITLE OF PROJECT
Reconnaissance Mapping of Alluvial Valley Floors in Northeastern Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jack Schmidt, Printipal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Montana Department of Health and Environmental Sciences
Helena, Montana 59601

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The evolution of a new Federal Coal Leasing Program has placed new emphasis on mining the shallower coal deposits of the western United States. A critical variable to be considered is the competition of the shallow coal mining operation with other established land uses. The competition has been especially focused at the existing agricultural land uses within alluvial valley floors. Alluvial valley floors are combinations of geologic, hydrologic and land use factors, usually agricultural land use, that because of the storage of shallow ground water, are important to the economic well-being of agricultural operations in the semi-arid western United States. However, the specific interactions of the geologic, hydrologic and biologic functions of such lowland drainagesareas are not sufficiently represented in existing sourcesoof data to permit certain identification without field investigations of situations which may differ (differ in the climatological, geologic, hydrologic, and biologic sense) from those areas recently investigated (southcentral/eastern Montana, northeastern Wyoming). Experience has shown that reconnaissance mapping on a county-basis can be accurately extrapolated to larger drainage basins to project the extent of potential conflicts between established agricultural land uses of the alluvial valleys and the surface mining of coal. Selected proposals for federal surface coal mining legislation and regulations address alluvial balley floors and protection of the functions thereof to differing degrees. Montana has shown great interest in assessing the relative importance of the alluvial valley floors. This effort will therefore involve a reconnaissance mapping of surface drainages in a three-county area of northeastern Montana (Dawson, Richland, and McCone counties). In addition, appropriate measures will be identified to protect the water-dependent resources of agriculturally-important alluvial valleys where such valleys have potential to be affected by the coal resource.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER / RESPONSIBLE ORGANIZATION
☐ AGENCY STAFF *(Intramural)*	1	PROJECT OFFICER Cooper H. Wayman
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA-Region 8
☐ RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76			

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCG

TITLE OF PROJECT
Development of Ultrasensitive Ammonia Monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Hrubesh, L.W., Principal Investigator, Chemistry Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P.O. Box 808
Livermore, Ca. 94550

Phone: (415) 447-1100 ext. 8816

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to increase the sensitivity of existing ammonia gas detectors by preconcentration techniques.

Our Study will result in the selection of a preconcentration method which can satisfy the following requirements:

1) Extend the detection limit of the microwave instrument to 1 ppb in air.
2) Operate in a automatic mode.
3) Be field useable.

After an exhaustive investigation of trapping materials for ammonia we have concentrated our efforts on two techniques. One is the use of a chromatographic packing material, chromosorb 104, as a trap for ammonia. The other is cryogenic cooling to -125°C by liquid argon. Both of these show the highest promise for quantitative trapping of ammonia. The cryogenic technique so far has shown to be the best trap while the chromosorb 104 lends itself most readily for automatic field use. We are continuing to compare these two techniques for optimum use.

We have designed and constructed an integrator/preconcentrator module which atomates the trapping, flashing and integrating functions. The operation of this instrument is described in a report UCID 17174. An instrument has been delivered to the Environmental Protection Agency, Research Triangle Park, North Carolina, where it will be tested by Dr. William McClenney with other ammonia detectors such as chemilumenscent and laser opto-acoustic.

Our work will continue to determine quantitative reproducibility and lower detectable limits. Then we will test the combination of preconcentrator/microwave detector for field use and report on the results.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NA	SIGNATURE OF PRINCIPAL INVESTIGATOR L. Hrubesh	DATE 27/10/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Gregory T. D'Alessio
	AGENCY STAFF (Intramural)	#1	RESPONSIBLE ORGANIZATION AAES/ERDA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$25K	1976	Three	June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E681-BCG

TITLE OF PROJECT
Optical Absorption Properties of Sulfate Aerosol

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

P. T. Cunningham -Principal Investigator - Chemist
R. Kumar, Engineer
S. A. Johnson, Scientific Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 So. Cass Avenue
Argonne, IL 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop techniques and procedures for the measurement of sulfate and acid sulfate in atmospheric aerosol material. The approach is based on the determination of the infrared absorbtion spectra or other characteristic spectra of the aerosol material and its derivatives. Progress during the past year has included development of procedures that preserve the acidity of samples collected on filters during the samples preparation steps prior to obtaining the spectrum. The infrared characterization technique has been compared in the field with other methods for the measurement of sulfate and acidic sulfate aerosol. Current plans are to continue to develop new techniques and improved procedures for sulfate aerosol characterization.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N.A.	SIGNATURE OF PRINCIPAL INVESTIGATOR PT Cunningham	DATE 10/28/76

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$30,000	76			June 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Optimize Filters and Stack Probe for Aerosol Source Sampling

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

H. J. Ettinger, Industrial Hygiene Group, Group Leader
M. I. Tillery, Industrial Hygiene Group, Aerosol Studies Section, Section Leader
J. C. Elder, Industrial Hygiene Group, Aerosol Studies Section, Staff Member

NAME AND ADDRESS OF APPLICANT INSTITUTION

Los Alamos Scientific Laboratory
P.O. Box 1663, MS 486
Los Alamos, New Mexico 87545

phone information:
FTS 843-6145
com'l 505/667-6145

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are evaluation of existing particulate, stack sampling procedures (EPA Method 5), including probes and filter media, and development of an extractive stack sampler without the limitations of the existing sampler. This sampler should measure total particulate mass and particle size characteristics conveniently, rapidly and accurately.

Evaluation of existing stack probes and filter media has been initiated Deposition of monodisperse dye aerosols and polydisperse fly ash and glass bead aerosols in several size ranges was measured under representative flow (14 and 28 ℓ/min) and temperature (140-160°C) conditions. Deposition in the sampling probe ranged from 94% using a 13 μm mmd glass aerosol to 1.5% with a 1.2 μm dye aerosol. The probe nozzle (particularly the 0.25 inch diam nozzle) is the major deposition point.

Collection efficiencies of two commonly-used glass fiber filters against monodisperse fluorescing dye aerosols are being measured at 11, 21, and 28 ℓ/min and 160°C conditions. Mass measurements by a fluorometric technique of aerosol material collected on a backup reference filter provides data for calculating efficiency of the test filter. Preliminary filter efficiencies range from 94 to 99.9%, somewhat lower than expected. Confirming experiments are planned.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Marvin I Tillery	11-8-76

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$65,000	76		1975	June 1977

*Funds approximate not for citation. 166 AND SI-SIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Studies to determine SO_3 and SO_4 in Power Plant Stack Emissions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Leonard Newman, Applied Science. Head, Atmospheric and Analytical Chemistry
(Tel. 516-345-4467)
Russell N. Dietz
Stephen E. Schwartz

NAME AND ADDRESS OF APPLICANT INSTITUTION

Brookhaven National Laboratory
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Primary sulfates may comprise a significant fraction of total ambient urban sulfate concentrations and the emissions of sulfates from fossil fuel combustion may not decrease linearly with the sulfur content in the fuel. The present study was initiated as a literature review to examine the role of sulfate emissions on ambient sulfate levels and in particular to assess the role of fuel sulfur content, as well as other combustion process variables, on sulfate emission factors. Our review of the literature concerning the formation of sulfates in combustion systems, the methodology for determination of sulfate emissions, and the impact of primary sulfates upon ambient urban sulfate concentrations has led to the following conclusions:

1. Within the bounds of present knowledge concerning their emission rates, primary sulfates may contribute significantly to ambient urban sulfate concentrations.

2. Previous efforts directed towards determining the rate of sulfate emissions from various combustion sources have demonstrated a widespread range in the fraction of sulfur oxides emitted as sulfates.

3. Serious questions have been raised in a number of studies regarding the suitability and validity of the two widely employed methods for measuring sulfate concentrations in stack gases, viz. isopropyl alcohol absorption and controlled condensation.

Our study will now include selected field measurements of primary sulfate emissions. New and improved techniques of measurement will be implemented.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR
Leonard Newman

DATE
10/26/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
4

PROJECT OFFICER
Hodge R. Wasson

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*
$75,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
June 1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCG

TITLE OF PROJECT
Beta Gauge & XRF Analysis for Aerosol Sampling Studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Joseph M. Jaklevic, Electronics Engineering, Project Engineer

Fred S. Goulding, Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Energy Research & Development Administration for
Lawrence Berkeley Laboratory
University of California
Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Objectives: To improve the measurement of particulates in air.

2) Approach: To further develop X-ray fluorescence methods for elemental analysis of particulates and to develop an accurate small beta gauge to measure the total mass particulates deposited on filters.

3) Current Plans: To continue the improvement in the methods developed in earlier years.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 10/11/76

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER Hodge R. Wasson
	AGENCY STAFF *(Intramural)*	5	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate* $120,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE Sept. 1976

*Funds approximate not for citation. 169 AND SI-SIE 75A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCH

TITLE OF PROJECT Development of Aqueous Effluent Instrumentation and Methods for Energy Related Sources - (Multicomponent)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Dr. Velmer A. Fassel, Deputy Director (515-294-2112); Dr. Harry J. Svec, Assistant Program Director; Dr. James Fritz, Chemist; Dr. Colin Crisswell, Assistant Chemist; Mr. J. Richard, Associate Chemist; Dr. Joseph Katzenburger, Postdoctoral; Mr. Walter L. Sutherland, Assistant Physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION
Ames Laboratory, USERDA
Iowa State University
Ames, Iowa 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The broad objectives of this study are to develop the basic science, the investigative methods and the hardware so that the demanding analytical requirements associated with the characterization of organic and inorganic pollutants in aqueous effluents from energy generating sources can be met in a viable practical manner. The specific effluents on which attention will be focused include waste or scrub water effluents from the mining, processing, and conversion of coal, acid mine drainage liquids, leachates and runoff from spent solid waste piles, and ground, surface, and estuary waters in the vicinity of coal operations and geothermal energy plants. The specific projects are (a) critical comparison of activated carbon and macroreticular resins for the isolation and characterization of trace organic pollutants in water; (b) development of chelating resins with macroreticular organic matrices for the isolation of heavy metal pollutants from estuary waters; and (c) expansion of the project on development and application of an inductively-coupled plasma analytical system for the simultaneous multielement determination of trace elemental pollutants.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
V. A. Fassel, Deputy Director

DATE 11/22/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER Hodge R. Wasson

RESPONSIBLE ORGANIZATION ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$113,000	76			June 1977

*Funds approximate not for citation. S AND SI-SIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCH

TITLE OF PROJECT
Instrumentation and Methods for Characterizing Aqueous Effluents from Oil Shale Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. R. Clark
Analytical Chemistry Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Plans to develop a large scale oil shale processing technology in the Green River formation must include surveilance of related effluents. This project focuses on the development of methods for the chemical characterization of aqueous effluents associated with the retorting processes; attention is being given principally to organic and trace metal components.

Organic components are being analyzed by several methods under development. First, major organic components are analyzed directly by gas chromatography with no sample pretreatment. Minor and trace organic components are removed from the samples by adsorption on activated carbon, neutral macroreticular resins and ion exchange resins. Profiling of components is carried out using gas chromatographic methods employing standard and specific element detectors. Fractionation of the organic mixture is followed by identification and quantification of some specific molecular species, e.g., phenols, polycyclic aromatic hydrocarbons and some nitrogenous bases. Trace metals will be determined simultaneously by spark source mass spectrometry.

Samples of retort product water were obtained from the Laramie Energy Research Center. Activated carbon extraction is being carried out on this and other aqueous samples from a coal conversion process to gain some detailed knowledge of extraction efficiencies for compound classes using this technique. When the extraction procedure is sufficiently developed, instrumentation for automation of this step will be developed concomitantly with chemical characterization studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR Bruce R. Clark	DATE 10/14/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Rodge R. Wesson
	AGENCY STAFF (Intramural)	1a.	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA
	RESEARCH GRANT		

Funds Estimate* $60,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE June 1976

*Funds approximate not for citation. [illegible] AND SSIE [illegible] WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-BCH

TITLE OF PROJECT
Instrumentation and Methods for Characterizing Aqueous Effluents from Oil Refining Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. R. Clark
A Analytical Chemistry Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Oil refining processes have associated effluents which may be detrimental to health and/or environment. Although many gaseous effluents have long been identified, detailed knowledge of aqueous effluent streams requires additional scrutinity in order to assure a minimum hazard.

The scope of this project includes the chemical characterization of organic components in process waters admitted to the environment. This will be accomplished by the development and application of methodology suitable for the extraction, concentration, fractionation and chemical characterization of the organic components.

Plans and present efforts involve the adaptation of extraction procedures for the efficient separation of organic compounds of all important classes. A large number of major organic components can be analyzed directly by gas chromatography with no sample preparation. Minor and trace organic components are removed and concentrated by adsorption on activated carbon, macroreticular resins or ion exchange resins. Whole sample and fraction profiles will be carried out employing gas chromatographic techniques with standard and specific element selective detectors. Specific compound analyses may be made with special concern for the levels of phenols and polycyclic aromatic hydrocarbons.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR Bruce R. Clark	DATE 10/14/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF (Intramural)	1b.	Hodge R. Wasson
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$33,000	76			June 1976

*Funds approximate not for citation.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
*EPA-IAG-D6-E681-***BCH**

TITLE OF PROJECT
Instrumentation and Mehtods for Characterizing Aqueous Effluents from Geothermal Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. R. Clark
Analytical Chemistry Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Geothermal steam and water sources may provide a substantial energy resource. Large scale production could have a significant health and/or environmental effect since a large number of salts and compounds have been identified in effluents from several operating facilities.

The scope of this project includes the development of methodology for the rapid analysis of trace metals in brines and steam condensates and a screening of organic compounds carried in aqueous effluent streams. Spark source mass spectrometry on whole and treated samples will be employed in the identification and quantification of metals. Charcoal extraction and concentration of organic compounds will be followed by chemical characterization and profiling using gas chromatographic techniques. Known hazardous compounds, e.g., phenols and polycyclic aromatic hydrocarbons, will be sought in these preliminary studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Bruce R. Clark

DATE
10/14/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1c

PROJECT OFFICER
Hodge R. Wasson

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20,000	76			June 1977

*Funds approximate not for citation. 166 AND SSIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use th space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E771-BEL

TITLE OF PROJECT

Western Energy - Related Overhead Monitoring (WEROM)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NASA Proj. Coord. - W. Stoney, NASA Hq - Washington, DC 20546 - 8-755-8584
NASA Proj. Dir. - R.L. Tilton, III - Earth Resources Lab - 1010 Gause Blvd - Slidell LA - 70548 - 8-685-6511
NASA Prin. Investigator - Dr. A.T. Joyce-Earth Resources Lab (Address above) 685-6531
NASA Tech. Investigator - J.R. Anderson-Earth Resources Lab (Address above) 685-6531

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives

The objective of this project is to transfer remote sensor data acquisition and processing techniques from NASA to EPA for energy-related overhead monitoring system.

Approach

The project will be conducted in 3 phases with data from selected sites in Western U.S. Of the total effort expended during the project, approximately 50% will be dedicated to the monitoring of coal strip mine rehabilitation activities. Monitoring the environmental impact of mine mouth fossil fuel power plant emissions will account for approximately 30% of the total effort. Rehabilitation problems associated with oil shale extraction will comprise about 15-20% of the project work. Minor effort will include monitoring techniques applicable to geothermal prospects.

Current Plans and Progress

During Phase I (18 months) coal strip mine monitoring products derived from satellite and aircraft data acquisition systems have been delivered to EPA for evaluation. In addition, a data processing system has been assembled, and will be transferred to EPA during Phase II. EPA personnel have been scheduled for a training course, during which techniques dealing with the use of system hardware and NASA software and processing techniques will be presented. Phase II (18 months) will include demonstration and transfer of monitoring techniques developed during Phase I. The demonstration will consist of a periodic inventory of selected sites and will approach the operational system to be used by EPA. During Phase III (2 years) EPA will use the techniques in an operational mode, with NASA providing assistance in the operation of the system, and in the addition of new capabilities as developed during Phases I and II.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		7/1/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☒ AGENCY STAFF *(Intramural)*	1-5	E. Tilton
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		NASA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$550,000	76		8/75	12/79

*Funds approximate not for citation. 6 AND SI-SIE 76A WHICH MAY NOT BE USED.

Reproduced from best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E771-BEU

TITLE OF PROJECT
Energy Related Remote and In Situ Sensing Instrument Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. G. B. Northam (804-827-2576), Atmospheric Environmental and Sciences Division
Dr. F. Allario (804-827-2986), Atmospheric Environmental and Science Division
Dr. G. L. Gregory (804-827-2486), Marine and Applications Technology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23665

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: To develop and apply advanced electro-optical techniques to the measurement and characterization of power-plant and other source effluents.

(2) Approach: To meet the project objectives the following tasks will be conducted:

Task 1 - Raman Lidar. - Evaluate Raman Lidar for remote measurement of the concentration of SO_2 and NO at a power-plant stack exit. (See Progress)

Task 2 - Plume Dispersion Studies. - Apply aerosol scattering lidar techniques to the study of plume dispersion under various atmospheric conditions. (See Progress)

Task 3 - IR DIAL. - Develop and apply the tunable IR differential absorption lidar (DIAL) technique to the remote measurement of molecular plume effluents.

Task 4 - Laser Heterodyne Detector. - Evaluate the use of the laser heterodyne detector technique as a means to increase the sensitivity of long path continuous wave absorption measurements using diffuse reflectors.

Task 5 - HCl Monitor. - Develop and deliver to EPA an improved in situ HCl chemiluminescent monitor. The monitor will be evaluated at concentrations as low as 5 ppb HCl in ambient and polluted air.

(3) Current Plans and/or Progress: Tasks 1 involving evaluation of the Raman Lidar for remote measurement of SO_2 and NO at power-plant stack exit, has been completed. Task 2 which is intended to apply aerosol scattering lidar techniques to the study of plume dispersion under various atmospheric conditions has been postponed due to the lack of funding at this time.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
Not Applicable

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Sept. 13, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1-5

PROJECT OFFICER
John P. Mugler, Jr.

RESPONSIBLE ORGANIZATION
NASA Langley Research Center SEP 16 1976

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
146K 37K	1976 1976T	4	July 1, 1975	June 30, 1979

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E684-BCK

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

H. Okabe
Physical Chemistry Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

ABSTRACT

The quenching constants of SO_2 fluorescence excited by a 216 nm deuterium source have been obtained for N_2, O_2 air and CO_2. They are 0.75 ± 0.09, 2.68 ± 0.09, 1.16 ± 0.01 and 0.74 ± 0.07 respectively all in units 10^{-3} torr^{-1}. The fluorescence signal of SO_2 in simulated stack emission in several percent lower than that in pure N_2. The presence of NO does not interfere with the SO_2 measurement by a fluorescence method.

INTRODUCTION

Fluorescence in the near ultraviolet has been observed when SO_2 is irradiated with the Zn 213.8 nm line. Because the lifetime of the fluorescence is so short, the quenching by air even at one atmosphere is still not appreciable. This forms the basis of the measurement of low SO_2 concentrations in air. For the application of this method to monitoring SO_2 in source emission such as stack gas and automobile exhaust, one must consider that the composition of the emission gas is very different from that of air. Since different gases would be expected to show different quenching properties for the SO_2 fluorescence, the signal would depend on the composition of the gas mixture. The previous work was performed only for SO_2-air mixtures. In this report the quenching constants of N_2, O_2, and CO_2, the main constituents in stack emission and automobile exhaust, are obtained. The SO_2 fluorescence signals are measured in various N_2-O_2 and N_2-CO_2 mixtures at atmospheric pressure. The effect of NO ultraviolet fluorescence is also investigated.

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Jerry R. McNesby
☒	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION NBS
☐	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
0	76			6/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 H. Okabe (continued)

CONCLUSION

It may be concluded that the SO_2 signal in simulated stack gas mixture is about 5% lower than that of SO_2 in pure N_2 and about 10% higher than that of SO_2 in air in the absence of water. The presence of 1200 ppm NO shows almost no effect on the SO_2 signal because of the strong quenching effect of NO fluorescence by CO_2. The results are based on a light source with a peak at 216 nm and a half width of 23 nm. Thus the quenching effects of stack gases may not be significant if the SO_2-N_2 mixture is used as a calibration gas, in view of other factors to be considered in the actual measurement such as inhomogeneity in mixing and the adsorption of SO_2 on the walls. However if SO_2 is excited by a source emitting longer wavelengths, the quenching effects may become significant.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E684-BCK

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. D. Deslattes
Optical Physics Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The SO_2 Fluorescence Project to study the feasibility of using laser induced fluorescence from SO_2 as a pollution monitor has been completed. The following paragraphs summarize the status of the work on the spectroscopy of SO_2, lifetimes of SO_2 and the detection of SO_2.

The spectroscopy of SO_2 was primarily done by Harry J. Dewey. More than 20 vibronic bands are located in the region of 234.8 nm (0,0,0) to 218.6 nm. He was successful in assigning the first 10 bands through 224.7 nm with independent confirmation of the assignments by J.C. Brand (University of Western Ontario). Band assignments at higher energies are made extremely difficult due to strong coupling between the symmetric and asymmetric stretch modes (ν_1 and ν_3) of SO_2. As a result most bands consist of an admixture of modes rather than pure states. The fluorescence spectra not only permitted the above assignments but also determined the optimum wavelengths for monitoring the SO_2 fluorescence in detectors.

In order to measure the lifetimes and quenching rates of SO_2 the Laser Chemistry Program acquired a fast dual channel boxcar with nanosecond resolution. The boxcar is scanned by a signal averager and decay curves were stored for later computer analysis. The combination of the short laser pulse (typically 3-4 nsec), fast photomultiplier and boxcar allow determination of lifetimes down to 10 nanoseconds. Published data of quantum yields and doubling efficiency suggested that the investigations be centered on the 218,6 nm to 223.8 nm region of SO_2.

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1a&2a

PROJECT OFFICER J.R. McNesby

RESPONSIBLE ORGANIZATION Office of Air&Water Manag., NBS

FUNDS OBLIGATED 1a- 0
2a-50K

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 R. D. Deslattes (continued)

In conclusion of this report some suggestions for possible future work can be made. To demonstrate the ultimate accuracy and detectability obtainable with a laser induced fluorescence SO_2 monitor, the above suggestions for increasing the detectability should be carried out with a flowing sample system similar to the one used in calibrating the NBS SO_2 monitor. It would also be advisable to repeat the work with NO as an NO monitor may also be possible with this technique. Ultimately a detector would utilize a flashlamp pumped dye laser-double system as time resolution would not be a problem and significantly more photons could be obtained to increase detectability limits.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E684-BCK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. B. Kittelson
University of Minnesota

NAME AND ADDRESS OF APPLICANT INSTITUTION
Office of Air and Water Measurement
National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE

The primary objective of this program is to develop and characterize a continuous particulate sulfur analyzer for field use. The analyzer is to be designed so that it may reliably and continuously measure sulfur aerosols at concentration levels as low as encountered under clean ambient conditions (1 $\mu g\ m^{-3}$) and still be usable at the much higher concentratio levels encountered at emission sources. A secondary objective of this program is to begin work on a laboratory version of the instrument which will be capable of identifying individual sulfur compounds in atmospheric aerosols.

These objectives are being pursued through a cooperative program between the University of Minnesota Particle Technology Laboratory and the National Bureau of Standards.

Approach

The original instrument concept was envisioned to consist of an aerosol collection system, an aerosol evaporation system, and a gas phase flame photometric sulfur detection system. The collection system was to consist either of an electrostatic precipitation, impaction, or filtration device which would collect aerosol during an appropriate interval. The collected aerosol would then be evaporated/thermally decomposed and introduced into a gas stream flowing to a flame photometric total sulfur detector. The resulting signal would be integrated and converted to a total sulfur aerosol concentration. (continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	2	Jerry R. McNesby
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☒	RESEARCH GRANT		NBS

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$75,000	76			6/78

*Funds approximate not for citation. 56 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 D. B. Kittelson (continued)

FUTURE WORK

The basic instrument concept has been established as sound. The major problem area in the current system is the flame photometric detector. Considerable effort will be directed toward shortening the time constant of the instrument and increasing its sensitivity for this application. Its response to a variety of sulfur and non-sulfur aerosols will be investigated in detail.

At the same time work on detailed characterization on the combined precipitator-flame photometric detector will continue. Sensitivity to a variety of aerosols will be measured, and possible interferences from sulfur and non-sulfur gases, including water vapor, will be studied.

Field tests will be performed in St. Louis this summer and in Los Angeles this fall to determine the response of the instrument to actual atmospheric aerosols.

The last phase of the work will consist of designing and building a complete instrument package for field use. A dichotomous sampler may be fitted to the inlet to allow contributions from submicron and supermicron particles to be established independently.

Testing of the heated inlet system for thermal speciation of the sulfur aerosols is about to begin. This work will continue with an ultimate goal of developing a fast response thermal speciation device to connect to the inlet of total sulfur aerosol detection.

Further work with the aerosol chromatograph will include testing of the humidity response of a number of common atmospheric aerosol constituents, as well as field tests with actual atmospheric aerosols.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E684-BCM

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

S. P. Wasik
Physical Chemistry Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A method was developed for extracting organic compounds, under equilibrium conditions, from aqueous solutions by very small bubbles (< 0.1 mm dia.) of electrolytically generated hydrogen. Using this extraction procedure, three different methods were investigated for identifying petroleum oil spills.

The first method is concerned with determining the relative concentration of key aromatic hydrocarbons in sea water extracts. The second method is concerned with determining the change in the total hydrocarbon concentration in the head-space as a function of the volume of hydrogen bubbled through a known volume of a sea water extract. In the third method the fluorescence spectra of a sea water extract of the petroleum is measured as a function of the volume of hydrogen bubbled through the cell.

In the first method the basic premise is that it should be possible to identify a petroleum oil by determining the relative concentrations of certain key aromatic hydrocarbons in the sea water after an oil spill. Some alkyl-substituted naphthalenes found in petroleum such as 1,4-dimethylnaphthalene, 2,3-dimethylnaphthalene and 1,5-dimethylnaphthalene have very similar physical and chemical properties. These compounds should retain the same relative concentrations in sea water (after partitioning from the oil spill) as they have in the petroleum. These compounds partition from sea water into the atmosphere at the same rate because their partition coefficients are the same. Their relative concentrations will thus remain constant during the weathering process.

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
Jerry R. McNesby

RESPONSIBLE ORGANIZATION
NBS

Funds Estimate *	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$200,000	76			June 1980

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 S. P. Wasik (continued)

In the second method, the total hydrocarbon concentration in the head-space is measured as a function of volume of hydrogen bubbled through the cell in order to obtain a "finger print" of the petroleum. This method takes advantage of the fact that the total hydrocarbon concentration depends only on the concentrations of each individual hydrocarbon and its partition coefficient.

The hydrogen head-space is fed directly into a hydrogen flame detector. The detector signal is plotted against the hydrogen volume.

The third method is concerned with comparing the fluorescence spectra of an aqueous extract of petroleum before and after extraction with electrolylically generated hydrogen. Since the fluorescence compounds in the water extract have different partition coefficients their concentrations and hence their spectra will be changed by the extracting process.

A fluorescence cell was modified to an electrolytic hydrogen extraction cell by the addition of a gold electrode at the base of the cell and electrode-salt bridge near the top of the cell. This cell was contained in a constant temperature bath located in the optical bath of a fluorescence spectrometer. The fluorescence spectrum of the water extract was measured prior to and after hydrogen extraction.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E684-BCL,BCM

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. A. Becker
Acting Program Manager
Recycled Oil, IMR

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

ABSTRACT

In cooperation with the Environmental Protection Agency (EPA) and other Government agencies, the National Bureau of Standards (NBS) is developing methodology and Standard Materials for measuring the environmental effects resulting from increased energy production. The NBS Analytical Chemistry Division is initiating research and development in the areas of Reference Materials, instrumentation, and methods required for monitoring air and water quality associated with energy production.

OBJECTIVE

The research and development leading to Reference Materials, instrumentation and methods urgently needed for the monitoring of air and water quality associated with increased energy development of many different types.

MOTIVATION

Due to the current and future energy problems facing the U.S., it has become imperative for the rapid development of the internal energy capabilities of this country. In order to maintain an acceptable level of environmental pollution, the methods devised for increased utilization of these internal energy sources (e.g. petroleum, coal, uranium, geothermal) must be adequately evaluated and monitored for effects on air and water pollution. In order to effectively carry out its responsibilities in
(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
BCL-1
BCM-1

PROJECT OFFICER
Jerry R. McNesby

RESPONSIBLE ORGANIZATION
NBS

Funds Estimate*
BCL-$415,000
BCM-$300,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
BCL-6/79,BCM-1/77

*Funds approximate not for citation 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 D. A. Becker (continued)

these areas, the EPA has requested the assistance of the NBS Analytical Chemistry Division for research and development of Standard Reference Materials.

APPROACH

The overall approach to be taken involves three (3) basic steps. First, in areas of well-defined pollution effects the emphasis will be on the development and Certification of Standard Reference Materials (SRM's) to enable effective quantitation. Examples of such well defined pollution effects include gases in air pollution (e.g sulfur dioxide, carbon monoxide) and trace metals in water pollution (e.g., mercury, arsenic, lead). Second, in areas of known effects but imperfect measurement methodology, research and development on analytical methods and instrumentation will be undertaken. Examples of these areas include particulates and trace organics in air and water pollution. Third, in areas of new or increased energy production techniques (i.e., coal gasification and liquefaction, uranium production, etc.) a series of workshops will be held to help define the current state-of-the-art, and future requirements for analytical Reference Materials and methodology for air and water pollution measurements.

PROGRESS

Appropriate Interagency Agreements became effective on May 25, 1975. Projects have been initiated.

PLANS

In fiscal year 1976, the three (3) research and development areas described under Approach, above, will be initiated. A number of SRM's will be produced and Certified. Investigations into the relevant raw materials, products and residues from the various energy systems will be made. A series of Workshops on the energy production processes and their pollution potential will be held to determine SRM's required.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	Form Approved OMB No. 158-R0081
	PROJECT NO. (Do not use this space) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E684-BCN

TITLE OF PROJECT

Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. M. R. Hutchinson
Applied Radiation Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Bureau of Standards
Washington, DC 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The project is aimed at providing traceability measurements through the Environmental Protection Agency at Las Vegas (EPA-LV) of certain radionuclides not covered under existing programs. These radionuclides were chosen because they are released as environmental pollutants from nuclear power reactors (such as light water reactors and fast-breeder reactors), coal burning power plants and, or other sources.

ESTABLISH LABORATORY FACILITY

(i) The glove boxes have been installed and the modifications to the radiochemistry laboratory are now complete. The electronic equipment associated with the radon counting system has been almost totally replaced and tested.

(ii) Plans for the layout of the "medium geometry" counter have been completed. The counter and the associated electronics are being assembled.

^{210}Po STANDARD

Forty polonium-210 test solutions were prepared, calibrated, and sent to EPA-LV. Reports of Calibration have been furnished.

The *mixed gamma-ray* standard has been furnished to EPA-LV as described in the previous progress report.

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) * AGENCY STAFF (Intramural) ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 1	PROJECT OFFICER Jerry R. McNesby RESPONSIBLE ORGANIZATION NBS

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$51,000	76			12/79

*Funds approximate not for citation. ' 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

2 J. M. R. Hutchinson (continued)

The ^{226}Ra-in-soil standard is being prepared from Moncos shale, which was ground, milled, blended and sieved by EPA-LV. Homogeneity tests have been conducted on 10g and 100g samples, and the results show no need for further homogenizing. Five 10g samples were radiochemically analyzed for ^{226}Ra using a fusion technique and ionization chamber counting of the ^{222}Rn. The results agree with corroborative measurements on emitted γ rays using a Ge(Li) detector, and known γ-ray abundances.

Plans are nearly complete for the ^{239}Pu standards and production will begin within the next two months.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAC-D6-E693-BDX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
UNDERWAY WATER SAMPLING SYSTEM

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Charles D. Kearse
Deputy Director, Engineering Development Laboratory
NOAA/NOS/C61
Rockville, Maryland

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objective

The objective of this program is to develop a cost effective shipborne system with which to measure those physical and chemical parameters which determine the identity, concentration, transport, and distribution of pollutants arising from energy activities in the marine environment.

(2) Approach

An underway, interactive water measurement system that will obtain continuous water samples and oceanographic measurements will be developed. The major elements of the development program consists of:

a. The Current/Depth Measurement Subsystem
b. The Water Sampling and Measurement Subsystem
c. The Data Processing, Display and Navigation Subsystem
d. System Integration, Test and Techniques Development.

(3) Current Plans and Progress

An application study is currently in progress to define the requirements in progress to define the requirements for water sampling and on-board chemical analysis techniques.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Charles D. Kearse

DATE
9/23/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO

PROJECT OFFICER
John Townsend, Jr.

RESPONSIBLE ORGANIZATION
NOAA/NOS/EDL/C61

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$35 $145K	76TQ 76		August 1975	December 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 766 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA - IAG - D6 -E693 - BDY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ocean Oil Spill Concentration and Trajectory Forecast

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Celso. S. Barrientos, Research Meteorologist
Kurt W. Hess, Physical Scientist
David M. Feit, Research Meteorologist
W427, NOAA-NWS/TDL, Silver Spring, Md. 20910

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop a numerical model which will predict the movement and concentration of spilled oil in the oceans as a function of space and time. The program also includes provisions for forecasting current, wind, and wave fields that have not previously been available.

To accomplish this objective, the program is divided into seven tasks: (1) Surface wind field, (2) Ocean currents, (3) Direct wind drag effects, (4) Wave transport, (5) Sea-Air pollutant transfer, (6) Horizontal turbulent diffusion, and (7) Model integration. Tasks (1) and (7) are done in-house and the rest of the work is to be done by contract. The final result of the project will be an operational oil spill trajectory forecast program.

Considerable progress has been made on the surface wind task. A contract was awarded and two additional contracts will soon be awarded. We have coordinated with related projects within NOAA and other agencies. Planning and model integration is in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Celso S. Barrientos	DATE 23 Sept. 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER John W. Townsend, Jr.
	AGENCY STAFF (Intramural)	1-7	RESPONSIBLE ORGANIZATION NOAA/NWS/TDL W427
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED $150 $38	F.Y. 76 76TQ	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 3	STARTING DATE July 1975	ESTIMATED COMPLETION DATE Dec. 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BDZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Shipboard Environmental Data Acquisition System (SEAS)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Richard R. Reynolds, Project Manager
Equipment Development Laboratory, Systems Development Office
National Weather Service, 8060 13th Street
Silver Spring, Maryland 20910

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective: The SEAS program objective is to develop an automated meteorological/oceanographic observation system for use on board ships.

2. Approach: (a) Develop an engineering model SEAS and test it in an operational environment.

   (b) Develop an automated expendable bathythermograph (XBT) capability as an add-on sensor to the SEAS system.

   (c) Prepare prototype model SEAS specifications and procure five systems for testing on different classes of ships.

3. Current Plans/Progress: The engineering model (SEAS-1) has been developed and is currently undergoing tests and evaluation on the NOAA Ship RESEARCHER. The automated XBT system will be completed by early CY 1977 and integrated with SEAS-1 for testing. Prototype model specifications will be developed in FY 1977.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Richard R. Reynolds Richard R. Reynolds	DATE Sept. 22, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☒ AGENCY STAFF *(Intramural)*	1-5	Roy E. Wyett
☒ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NOAA
☐ RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20K $80K	76 TQ 76		July 1975	Dec. 1977

* EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E693-BEA

TITLE OF PROJECT

Standardization and Intercalibration techniques for Marine Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Michael Basileo, Chief, Metrology Branch
NOAA-NOS, Office of Marine Technology, Test and Evaluation Laboratory
Bldg 160 - Navy Yard Annex
Rockville, Maryland 20852

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to develop common techniques for the standardization and intercalibration of sampling and analytical methodologies in the marine environment. Effort will be concentrated on developing appropriate mechanisms for coordination of standardization and intercalibration activities among state, local, and private agencies.

In support of this objective, contracts have been awarded for the development of a dissolved oxygen laboratory standard and a dynamic test standard for current meters; a transfer standard for interlaboratory calibrations has been procured; and an investigation into the traceability of in-situ water quality measurements compared to existing chemical standards has begun.

Current plans include the development of a users' guide for optical instrumentation; an evaluation of quality of data obtained from water quality "test kits"; a comparison study of water analysis methods utilized for seawater in reference to standard techniques developed for fresh water; and establishment of an interlaboratory calibration capability for precision pressure sensors.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR Michael Basileo	DATE 9/24/76

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER John W. Townsend, Jr.
	AGENCY STAFF *(Intramural)*	1-3	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NOAA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$250 K	76	1	7/75	12/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E693-BEB

TITLE OF PROJECT: Lidar Techniques for Measuring Particulate Pollutants from Energy Production and Their Transport and Dispersion Processes.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

V. E. Derr (principal investigator), Supervisory Physicist
R. L. Schwiesow (co-investigator), Physicist
G. T. McNice, Physicist
N. L. Abshire, Physicist
G. M. Lerfald, Physicist
M. J. Post, Electronic Engineer
R. E. Cupp, Physicist
R. F. Calfee, Physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Wave Propagation Laboratory
Atmospheric Spectroscopy Program Area, R45x3
Environmental Research Laboratories, NOAA
Boulder, Colorado 80302

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives (two tasks):

a) Develop and verify economical lidar measurement techniques for remote tracing and analyzing of pollutants arising from power plants.

b) Develop and test an operational, infrared, continuous-wave Doppler lidar sensor for high resolution measurements of atmospheric wind, turbulence, and aerosol backscatter aspects of pollutant transport.

(2) Approach:

a) We are extending the capabilities of the existing pulsed lidar to include polarization sensitivity and multiwavelength operation. This equipment is being used in field experiments at Colstrip, Montana and in various Colorado locations to test the plume characterization capability of the lidar. Experimental developments are guided by theoretical studies on aerosol backscatter properties.

b) The WPL mobile Doppler lidar system is being applied to wind profile measurements in various environments and to the velocity structure of natural atmospheric vortices. Equipment modifications are underway to improve the lidar capability in stack emission measurements, three-component wind profiles, and large-diameter aerosol profiles.

(3) Progress:

a) Lidar backscatter data on intensity and polarization from various natural and man-made atmospheric particles has been obtained in three different locations. Depolarization is a significant aerosol identifier. Theoretical calculations are underway.

b) Doppler lidar 1-component wind profile measurements have been completed in desert, seacoast and urban environments. Preliminary velocity data is available on cooling tower plumes and power plant stack-effluents.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.): N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR: V. E. Derr, PA Chief, R45x3

DATE: Oct. 1, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 1&2

PROJECT OFFICER: John W. Townsend, Jr.

RESPONSIBLE ORGANIZATION: NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
195	76	3	July 1975	July 1980
50	76TQ			

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Michael D. Roach, Chief, Air Quality Bureau
MRK. Botz, Water Quality Bureau
Benjamin Wake, Administrator, Environmental Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Department of Health and Environmental Sciences, State of Montana
Cogswell Building
Helena, Montana 59601

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Background air monitoring in energy areas.
2. Background water monitoring in energy areas.
3. Particulate samples will be analyzed for nitrate and sulfate.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Mr. Machta

RESPONSIBLE ORGANIZATION
NOAA

Funds Estimate*
$15, 714

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
1975

ESTIMATED COMPLETION DATE
1977

*Funds approximate not for citation. 6 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Collection of Upper Air Data in the Fort Union Basin

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Ray Booker

NAME AND ADDRESS OF APPLICANT INSTITUTION

Aeromet, Inc.
P.O. Box FF
Norman, Oklahoma 73069

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study is a continuation of a contract that is providing upper air data at seven sites: Craig and C-b Oil Shale Tract, Colorado; Hanksville and Escalante, Utah; Casper and Rock Springs, Wyoming. Temperature, wind speed and direction versus altitude are being measured via pilot balloons and temperature sondes. Pilot balloons are released twice-a-day, every-other-day. Temperature and wind data are used to generate stability-wind rose data on a seasonal, annual and monthly basis. Summaries of inversions and mixing-layer heights aee provided too.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Mr. Machta

RESPONSIBLE ORGANIZATION
NOAA

Funds Estimate*
$15, 714

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
1975

ESTIMATED COMPLETION DATE
1977

*Funds approximate not for citation, 156 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Utah Visibility Program

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. R. F. Peuschel

NAME AND ADDRESS OF APPLICANT INSTITUTION
NOAA - Environmental Reserach Laboratory
Boulder, Colorado

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An intensive data collection of parameters which may be related to atmospheric visibility will be conducted in the San Rafael swell area in Central-eastern Utah. Light attentuation, particulate concentrations, particle chemistry, gaseous pollutant concentrations, and wind data will be obtained. A baseline program in addition to the assessment of the impact of four coal-fired power plants upon visibility will be assessed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Mr. Machta
X	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION NOAA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 1975	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-TAG-D6-E693-BEK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Meteorological Interpretation and Prediction of Air Quality in the Western U.S.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert J. Viebrock, Project Officer, NOAA
Dr. A. Bass, Principal Investigator, Environmental Research & Technology, Inc.
Dr. E.A. Berman, Senior Meteorologist, ERT
Dr. J. Nuber, Senior Research Computer Scientist, ERT

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Oceanic and Atmospheric Administration
Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the project is to select and apply a long distance dispersion model to estimate the impact of energy development, in the Four Corners Region of Utah, Colorado, New Mexico, and Arizona, on the regional air quality at a distance of 100-1000 km from the emission sources. A three step approach will be used: (1) the existing potentially applicable models will be reviewed and several selected for evaluation; (2) the selected models will be evaluated and one or more selected for use; and (3) the selected and evaluated model or models will be applied to a number of energy development scenarios in the Four Corners Region.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER
John W. Townsend, Jr.

RESPONSIBLE ORGANIZATION
NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 25	76 76 TQ	3	July 1975	July 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E693-BEK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in Utah

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Alvin E. Rickers, Director

NAME AND ADDRESS OF APPLICANT INSTITUTION
Bureau of Air Quality, Division of Health, State of Utah
44 Medical Drive
Salt Lake City, Utah 84113

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The state will install and operate air monitoring stations at: St. George, Emerg Co., Vernal, Castle Dale, Caineville, Kanab, Escalante, Bullfrog, Marina, and Wahweep Marina.

These monitoring stations will collect air data as background before power plants are built.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Mr. Machta

RESPONSIBLE ORGANIZATION
NOAA

Funds Estimate *	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15, 714	76		1975	1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Robert Sundin, Director, Dept of Environmental Quality
Randolph Wood, Administrator, Air Quality Division
F. Gerald Blackwell, Air Quality Supervisor

NAME AND ADDRESS OF APPLICANT INSTITUTION
Department of Environmental Quality
Hathaway Building
Cheyenne, Wyoming 82002

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to maintain and operate a network of ambient air monitoring stations established at certain sites within the state of Wyoming. During FY'76, there were seven sites and in FY'77, there will be nine sites, three of which will be continuous monitoring sites. These stations or sites will provide air quality data in possible energy development areas within Wyoming and will provide baseline data to assess possible deterioration of Wyoming's air from energy development in surrounding states. The sample operation will be conducted for apperiod of 24 months.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
- X AGENCY STAFF *(Intramural)*
- X NEGOTIATED CONTRACT
- ☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Mr. Machta

RESPONSIBLE ORGANIZATION
NOAA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15, 714	76		1975	1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in North Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. Van Heuvelen, Chief Environmental Health & Engineering Services
Gene A. Christianson, Director, Division of Environmental Engineering
Dana Mount, Assistant Director, Division of Environmental Engineering

NAME AND ADDRESS OF APPLICANT INSTITUTION
Environmental Health and Engineering Services
North Dakota State Department of Health, State Capitol
Bismarck, North Dakota 58505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to maintain and operate a network of eight ambient air monitoring stations established at certain sites in western North Dakota. These stations will provide air quality data in possible energy development areas within North Dakota and will provide baseline data to assess possible deterioration of North Dakota's air from energy development in surrounding states. The sampling operation will be conducted for a period of 24 months.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	
X	AGENCY STAFF *(Intramural)*	1	PROJECT OFFICER Mr. Machta
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NOAA
	RESEARCH GRANT		

Funds Estimate *	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15,714	76		1975	1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in South Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Allyn Lockner, Dept of Environmental Protection
Roger Stead, Dept of Environmental Protection

NAME AND ADDRESS OF APPLICANT INSTITUTION
Department of Environmental Protection
Joe Foss Building
Pierre, South Dakota 57501

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to maintain and operate a network of three ambient air monitoring stations established at certain sites within the state of South Dakota (Belle Fourche, Buffalo, and Lemmon). These stations will provide air quality data in possible energy development areas within South Dakota and will provide baseline data to assess possible deterioration of South Dakota's air from energy development in surrounding states. The sample operations will be conducted for a period of 24 months.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Mr. Machta
X	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION NOAA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15, 714	76		1975	1977

*Funds approximate not for citation. 66 AND SI-SIE 75A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Air Quality and Surface Wind Monitoring in Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mesa College, Grand Junction, Colorado
Wayne Max, Air Pollution Control Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Colorado Department of Health
4210 East 11th Avenue
Denver, Colorado 80220

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Install and operate air monitoring sites in the energy areas of western Colorado to collect baseline data prior to major expansion of energy activities. Particulate samples from the energy area will be analyzed for nitrate and sulfate content.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Mr. Machta
X	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION NOAA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15, 714	76		1975	1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)

SSIE

EPA
EPA-IAG-D6-E693-BEK

TITLE OF PROJECT
Collection of Upper Air Data at Gillette, Wyoming and Stanton, North Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Donald Hadley - Project Supervisor
Western Scientific Services, Inc.
328 Air Park Drive, Fort Collins, Colo. 8052]

NAME AND ADDRESS OF APPLICANT INSTITUTION

Same as above

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). ● In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study is a continuation of a 5 site data collection program initiated in June of 1975. Upper air temperature and wind data was collected and analyzed at the following areas: Gillette, Wyo; Bowman & Stanton, N.D.; Colstrip & Glendive, MT. Data was collected during June 1975- May 1976. This study extends the data collection at Gillette & Stanton for another year.

Pilot balloons and temperature soudes were released 2 times per day every other day during the initial 12 month period and will continue in this study once the contract is finalized. Plots of temperature, wind speed, wind direction versus altitude are available, as well as joint wind-stability distributions on a monthly, seasonal and annual basis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	1	Mr. Machta
*	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NOAA
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15, 714	76		1975	1977

*Funds approximate not for citation.166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693- BEK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Cloud and Precipitation Modification Effects of Pollutants from Energy Production

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R.F. Pueschel, Ph.D., Physicist, Program Director
C.C. Van Valin, Research Chemist
F.P. Parungo, Ph.D., Research Chemist
D.L. Wellman, Electronic Engineer
R.H. Proulx, Technician
H. Proulx, Technician
E. Ackerman, Technician
Nucleation Chemistry Group, APCL/NOAA/ERL

NAME AND ADDRESS OF APPLICANT INSTITUTION
Atmospheric Physics and Chemistry Laboratory, R31
National Oceanic and Atmospheric Administration
Environmental Research Laboratories, Boulder, Colorado 80302

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). *In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.*

(1) Objectives: Provide information on the size, shape, and chemical composition of atmospheric pollutants from power plants under varying moisture and background-pollution conditions. Develop criteria by which to assess their impact on the cloud and ice nuclei budget and solar and terrestrial radiative fluxes. Provide recommendations for control measures to minimize detrimental environmental effects.

(2) Approach: Measure in-situ by aircraft 1) primary (flyash) and secondary (gas-to-particle converted) aerosols, 2) gases that lead to particle formation, 3) infrared terrestrial radiation. Collect additional aerosol samples for delineating the parameters that determine cloud nucleating and radiative effects, viz., particle size and size distribution, shape, and elemental composition. Independently, determine the cloud and ice nucleating portion of the aerosol.

(3) Progress: 1. The Four Corners, N.M. power plant neither destroys nor creates ice nuclei that act by the deposition and/or condensation followed by freezing mechanisms. 2. In the same plume, a gas-to-particle conversion mechanism creates cloud condensation nuclei at a rate of 10^{14} to 10^{16} per second. 3. During the combustion process, water soluble sulfates and chlorides condense at the surface of flyash particles. 4. Infrared (8-14 μm) properties of plume effluents are: transmissivity = 0.82 ± 0.01; extinction coefficient = 0.99 ± 0.04 per kilometer; cooling rate = 0.64 ± 0.1 centigrade per hour.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Rudolf F Pueschel

DATE
October 1, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
John W. Townsend, Jr.

RESPONSIBLE ORGANIZATION
NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
130 40	76 76TQ	3	July 1975	July 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E721-BDH

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Isolation and Identification of Water-Borne Pollutants Associated With the Power Industry (Steam-Electric Generation)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. Wayne Holley, Chief, Laboratory Branch
Lyman H. Howe, Research Chemist
Lucy E. Scroggie, Research Chemist

(All are at the following address)
Tennessee Valley Authority
150 401 Building
4th and Chestnut Streets
Chattanooga, TN (615) 755-3135

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
Division of Environmental Planning
268 401 Building, 4th and Chestnut Streets
Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective--Laboratory studies will be made to improve analytical procedures and provide acceptable alternate analytical methods for several pollutants in water samples from energy-critical areas in the Tennessee and Ohio River Valleys.

Approach--(1) acrolein by voltammetry; (2) total arsenic by voltammetry, atomic absorption, and colorimetry; (3) zinc, cadmium, lead, and copper by voltammetry and referenced to atomic absorption; (4) digestion techniques for suspended and dissolved metals (Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, Mg, Mn, Mo, Ni, Pb, Sb, Se, Si, Ti, V, and Zn) by atomic emission plasma and referenced to atomic absorption; (5) sulfate by ion chromatography (applicable to air and water); (6) particulates by polarized light microscopy (applicable to air and water).

Progress--(1) acrolein (work completed July 1975); (2) arsenic (work completed September 1976); (3) zinc, cadmium, lead, and copper (work scheduled for completion December 1976).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
C. Wayne Holley
C. Wayne Holley

DATE
10-5-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Internal)
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
1 - 6

PROJECT OFFICER
C. Wayne Holley

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority
Division of Environmental Planning

AMOUNT OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$44,000	1976	3	May 7, 1975	May 6, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-**BDI**

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development and Evaluation of an Integrated Approach to the Optimization of Nuclear Power Plant Radiological Surveillance Programs

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. James A. Oppold, Project Director, 401 Chestnut St., Rm. 201, Chattanooga, TN 37401; FTS 854-3175
B. B. Hobbs, Analytical Chemist, Radiological Hygiene Branch
L. G. Kanipe, Analytical Chemist, Radiological Hygiene Branch
D. W. Nix, Analytical Chemist, Radiological Hygiene Branch
R. L. Doty, Health Physicist, Radiological Hygiene Branch
R. G. Wallace, Health Physicist, Radiological Hygiene Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
401 Chestnut St., Rm. 268
Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives:

1. To develop and maintain a model quality assurance program for radiological surveillance. The emphasis for this project will be on development of a multiple-laboratory program.
2. To develop improved radiological monitoring techniques.
3. To develop an optimized radiological monitoring program.

Approach:

1. To produce an analytical quality control document which can be used by radiological laboratories for quality control monitoring of procedures, counting equipment, and data handling.
2. To develop a program of interlaboratory studies, standards, and analytical and counting procedures to use as standard methods in multiple laboratories.
3. To produce guidelines for gamma counting and data reduction techniques.
4. To develop a cost-effective radiological surveillance program through the use of statistical methodology, parametric studies, and improved sampling procedures.

Progress:

1. A "Handbook for Analytical Quality Control in Radioanalytical Laboratories" has been produced in draft form.
2. An interlaboratory standards and crosscheck program has been established.
3. A report, "Least-Squares Resolution of Gamma-Ray Spectra in Environmental Monitoring" has been produced in draft form, relating to analysis using NaI(Tl) systems. A study of Ge(Li) detector systems is underway.
4. Statistical evaluation of available surveillance data is underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Larry G. Kanipe	DATE 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER James A. Oppold
	AGENCY STAFF *(Intramural)*		
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT	1	TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$118K obl.; $118K est. exp.	1976	3 (through FY 1979)	May 7, 1975	February 28, 1981

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E721-BDJ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Remote Sensing of SO_2 Effects on Vegetation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
Cecil D. Sapp (Principal Invest.), Biologist

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research activity involves testing, refinement, and development of remote sensing instrumentation and techniques for monitoring the visible effects of SO_2 emissions from fossil-fueled electric generating stations on terrestrial vegetation. NASA will collaborate with TVA in the project. Low and high altitude color, color infrared, multi-spectral scanning, and perhaps other types of imagery and ground-truth data will be obtained for effects on soybeans and mixed Southern pine-deciduous hardwood timber stands in the vicinities of the Shawnee and Widows Creek Steam Plants, respectively, for both visual and automated interpretations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
C. Daniel Sapp

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Herbert C. Jones III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
87 K	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E77B-BBWa

TITLE OF PROJECT Effect of Strip Mining on the Hydrology of Small Watersheds in the Black Mesa Area of Arizona

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:
Robert M. Myrick, Hydrologist
U.S. Geological Survey, WRD
Federal Building, Rm. 4J
Tucson, AZ 85701
(602) 792-6671

Project Director:
G. H. Davis, USGS
Reston, VA 22092
(703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division, Mail Stop 407
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of the Black Mesa hydrologic study is to define the effects of mining and related activities on the water resources of an area in the northeastern corner of Arizona. Overall effects of the proposed 35-year mining operation on the water resources will not be known until completion of mining and rehabilitation. However, many questions regarding the impact of mining and related activities may be answered by monitoring the hydrology of small watersheds. The technology of watershed modeling is sufficiently advanced so that the necessity of a lengthy precalibration period is eliminated.

Approach: Three watersheds of 400 acres each were selected along one of the principal tributaries in the area of mining to monitor the hydrology of a watershed under natural conditions and throughout the period of mining and rehabilitation. Rainfall, streamflow, sediment load, quality of water including trace elements and carbon derivatives, and other data such as vegetal cover are being collected. Instrumentation of three watersheds is desirable in case the actual progress of mining is changed from the present plans. Because of the remoteness of the study area and runoff characteristics, the data collection program must be automated as much as possible.

Progress: Three small basins were selected, and monitoring installations constructed at all sites. Reconnaissance has been made in search of a suitable location for a monitor on Moenkopi Wash, downstream from the project site. A major part of the instrumentation was purchased including stage recording equipment (both float and bubble gages), automatic sediment-sampling equipment, and a number of recording rain gages to be placed at selected points in each basin. Minimal work was accomplished on the ground-water well-drilling.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
NA

SIGNATURE OF PRINCIPAL INVESTIGATOR
George H. Davis

DATE
Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100.0K	76	5	Apr 75	June 82

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E77B-BBWa

TITLE OF PROJECT

Water Data for Coal Mining

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Frank A. Packard, Hydrologist, U.S. Geological Survey, Water Resources Div., Rm. 300, 1[illegible]05 Tacoma Ave., So., Tacoma, WA 98402 (206) 593-6510

Project Dir: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The State of Washington contains many coal deposits of potential economic significance. Basic water resources data are needed in the potential coal mining areas in in order to evaluate (1) the hydrologic problems involved in developing the coal, (2) the availability of water for producing or processing the coal, and (3) the environmental impact of the coal mining activity.

Approach: Water resources data will be collected and analyzed for three or more areas. GW studies will emphasize availability of water and protection of shallow aquifers. Streamflow data will be collected for analysis of low, mean, and peak flow characteristics. Baseline QW data will be collected, especially selected solutes, pH, temperature, and turbidity.

Progress: Baseline studies at Gallop Creek in the northwestern part of the State are in progress. At the lower station on this Creek downstream from a proposed mine portal, sampling at monthly intervals for common ions, nutrients, dissolved oxygen, suspended load and benthic invertebrates is in progress. Field measurements of discharge, pH, specific conductance, and atmospheric pressure are also being made. On a quarterly basis, samples are taken for analysis of the dissolved species of significant heavy metals.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR George H. Davis	DATE Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) X AGENCY STAFF (Intramural) NEGOTIATED CONTRACT RESEARCH GRANT	TASK NO. 2	PROJECT OFFICER F. A. Kilpatrick (703) 860-6846 RESPONSIBLE ORGANIZATION U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
35.0K	76	0	April 75	April 76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBWa

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Preplanning Study to Develop a Comprehensive Project Proposal for a Study of the Hydrologic Effects of Development of Alaska's Coal Resources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Investigator: Alvin J. Feulner, Hydrologist, U.S. Geological Survey, Water Resources Div., 218 E St., Anchorage, AK 99501 (907) 277-5526

Project Dir: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The preplanning study will evaluate the probable hydrologic effects and the kinds of hydrologic data needed to assess the environmental impact of mining operations in Alaska. It will outline the most likely areas for development of mining operations and anticipated hydrologic problems peculiar to those areas. It will include the following: (1) determination of surface and ground-water availability for mining operations and transportation of coal to markets or shipping points; (2) determination of baseline premining water quality in potential mining areas so that downstream changes in quality can be anticipated and monitored; (3) consideration of special artic hydrologic problems related to mining in permafrost areas; (4) develop a long-range plan for impact studies that will include alternative courses of action that will depend on various development plans; (5) arrange study areas and problems in priority sequence to aid in the making of decisions on the implementation of future studies. The study will compile existing information to determine where and what types of hydrologic studies are needed and will estimate the cost of such studies so that the mining impact can be evaluated in an orderly manner. A limited field recoqnaissance will be made to collect data in potential mining areas where presently data are not available.

Progress: Two coal fields, the Susitna and Nenana were selected for study this year. Hydrologic reconnaissance of the fields has been completed and systematic data collection is under way. Data collection includes a continuous stage and discharge stream gaging station and miscellaneous discharge and water quality sediment measurements at many sites in each field.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	F. George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	3	F. A. Kilpatrick (703) 860-6846
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
45.0 K	76	0	April 75	April 76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)

SSIE

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E77B-BBWa

TITLE OF PROJECT
Quality of Water Monitoring in the Chaco River Basin in NW New Mexico

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	Kim Ong, U.S. Geological Survey, Water Resources Division, P.O. Box 4369, Geology Bldg., 2nd Fl., Univ. of NM Campus, Albuquerque, NM 87106 (505) 766-2246
Project Dir:	G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To establish a network for collecting hydrologic information in the energy development areas of the Chaco River basin in northwestern New Mexico, which will be complementary and supplementary to current investigation. The information is to help define baseline or present water quality conditions of both surface and ground-water resources which will help determine the effects of present and proposed energy development in the area.

Approach: Operate a stream flow and quality station at the Chaco River at Chaco Canyon, samples by Park S. Staff; (2) collect four sets of samples at 10 sites by single-stage point samplers; (3) operate significant peak quality station at existing stream flow station Chaco River near the mouth by automatic pump sampler; (4) collect and analyze bed material samples for particle-size and trace elements that may be transported with storm flow; (5) collect and analyze chemically, samples from 10 wells from potential uranium mining area; (6) collect and analyze chemically, water samples from alluvial bed of dry arroyos.

Progress: A gaging station, surface and quality of water, was established on the Chaco River at Chaco Canyon National Monument. An automatic pump sampler (PS-69) was installed, and a pump sampler shelter was erected on the Chaco River near Waterflow, NM, which is near the river's mouth. The automatic pump sampler is activated for storm event sampling for both suspended sediment and chemical quality analyses. Also, a continuous temperature and specific conductance recorder was installed at this site.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	F. George H. Davis	October 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	4	F. A. Kilpatrick (703) 860-6846
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40.0	76	4	April 76	80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E77B-BBWb

TITLE OF PROJECT
Characterization of Mine Drainage in Southeastern Ohio

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Clifford G. Angelo, U.S. Geological Survey, Water Resources Division, 975 West Third Ave., Columbus, OH (614) 469-5553

Project Dir: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: (1) To document at a reconnaissance level the occurrence of basic inorganic and organic constituents in surface and ground waters of the coal mining regions of Ohio; (2) to relate the water-quality parameters to basin characteristics; (3) to make the basic data available to those concerned with finding a solution to the problem of water-quality degradation from mine drainage.

Approach: About 150 sampling sites, predominately surface water, but also a few ground water, have been selected in four small basins: (1) Huff Run which flows west towards Mineral City, Tuscurawas-Carroll Counties; (2) Snow Fork which flows south thru Murray City, Hocking-Athens Counties; (3) South Fork Short Creek which flows east toward Adena, Harrison County and (4) Spencer Creek which flows northeast toward Morristown, Belmont County. The sites will represent the geologic framework, terrain, and mining practices in southeast Ohio. During the study period, a number of samples will be collected at each site in order to obtain data representative of different flow regimes.

Progress: Samples have been collected and measurements of flow made at irregularly spaced sites along the main stem in each basin. Each tributary was field-checked and when field measurements indicated a low pH and/or high specific conductance, samples were taken and discharge measurements were made. The sources of water producing these conditions were traced to their origin. Snow Fork and Huff Run were found to be quite acidic; traced to abandoned underground mine shafts and gob piles and open high walls of abandoned strip mines. Sulfate content in the two basins ranged from 500 to 2400 mg/l and iron from 4500 to 21,000 mg/l. South Fork Short Creek and Spencer Creek had pH at mouth of 7.9 and 7.6, respectively. The tributaries originate in reclaimed strip mines, generally as overflow from strip ponds. The sulfate content in the Short Creek basin ranged from 820 to 2630 mg/l and iron from 20 to 1300 mg/l. The HCO_3 content was also high, ranging from 220 to 536 mg/l.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR Fr George H. Davis	DATE Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER F. A. Kilpatrick (703) 860-6846
X	AGENCY STAFF (Intramural)	1	RESPONSIBLE ORGANIZATION U.S. Geological Survey
	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40.0K	76	0	April 75	April 77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0061

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E77B-BBWb

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Characterization of Mine Drainage in Illinois

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	Larry G. Toler, Hydrologist, U.S. Geological Survey, Water Resources Div., P.O. Box 1026, 605 No. Neil St., Champaign, IL 61820 (217) 359-3918.
Project Dir:	George H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To document at a reconnaissance level, the occurrence and distribution of basic inorganic and organic constituents in surface and ground waters in the coal mining regions of Illinois. To relate water quality to basin characteristics and make the data available to those seeking a solution to water degradation in mined areas. To enable continued or increased mining with a minimum effect on water quality.
Approach: A data network will be designed and operated. Data will be analyzed, evaluated, interpreted, and published.
Progress: Twenty sites were sampled, most four times, at locations in the Big Muddy and Saline River basins in southern Illinois. All sampling was coordinated with routine sampling being done by Illinois EPA and more intensive sampling by the Greater Egypt Regional Planning Commission.

Samples collected in mining areas by USGS continue to show high concentrations of sulfate, acidity and several heavy metals.

Experiments were made on changes in pH, alkalinity and bicarbonate between the field and laboratory. No changes intotal alkalinity were observed on about 20 samples, however changes in pH and bicarbonate/carbonate ratios were common. Only field pH values are used and carbonate species are now determined in the field for all samples with pH greater than 8.3.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR George H. Davis	DATE Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	2	F. A. Kilpatrick (703) 860-6846
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20.0K	76	0	April 75	June 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E77B-BBWb

TITLE OF PROJECT Assessment of the Hydrologic Effects of Strip Mining in the New River Basin of Tennessee

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Stanley P. Sauer, Hydrologist, U.S. Geological Survey, Water Resources Div., A-413, Federal Building, U.S. Courthouse, Nashville, TN 37203 (615) 749-5424

Project Dir.: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective is to determine the effect on water quality, sediment-production, and streamflow of surface mining in selected areas of Tennessee. Unmined, actively mined, and previously mined (reclaimed and unreclaimed) areas of the State which are representative of the spectrum of climatological, geologic, hydrologic, and morphologic variations found in the region will be identified for data collection and analysis.
Approach: Existing information will be reviewed, areas classified in terms of geomorphology, coal characteristics, and mining and reclamation practices. A reconnaissance type QW investigation to determine the best areas of study will be undertaken.
Progress: LANDSAT imagery was used to characterize land cover in the basin. Nine land cover categories were identified and plotted on 7-1/2 minute base maps for the entire 382 sq. mi. basin using a computerized analysis of LANDSAT digital tapes. A composite map at a scale of 1:62500 was also prepared. Gage construction at five small watersheds was completed. These 1 to 5 sq. mi. watersheds represent stripped and virgin conditions. Continuous surface water records have been collected at each site since construction was finished. Water quality data is collected at these sites weekly by the University of Tennessee. An intensive sampling survey at 15 sites in the basin was completed. These sites were located along the New River main stem and the outlets of the larger tributaries. At each site 45 water quality parameters were measured. In addition, biologic data was collected at four sites. Monthly water quality and sediment sampling was initiated in November at five sites downstream from the gaged, actively mined watersheds and above the mouth of the New River.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
George H. Davis

DATE
Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20.0 K	76	0	April '75	April 77

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E77B-BBWb

TITLE OF PROJECT A Reconnaissance of the Effects of Strip Mining and Reclamation on the Concentration of Metals and the Buffering Characteristics of a Stream in Indiana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	William J. Shampine, Hydrologist, U.S. Geological Survey, Water Resources Div., 1819 No. Meridian St., Indianapolis, IN 46202 (317) 269-7101
Project Dir:	G. H. Davis, Research Hydrolgist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to monitor the changes that occur in the concentrations of selected metals and the characteristics of the buffer system in the hydrologic system adjacent to an area to be mined. The area selected is in the lower headwaters of the Wabash River in southwest Indiana. The data base will range from pre to post mining following reclamation.

Approach: It is expected that samples collected monthly at five sites will be adequate to define changes in water quality, although this frequency may be modified in response to a continuing data assessment. Analysis of metals will include the dissolved phase, suspended phase, and those associated with the bottom materials. The buffer system will be defined by field measurements of pH, acidity, and alkalinity; titration curves will be plotted for each of these determinations. Other field determinations will include temperature, specific conductance, DO, pH, and discharge.

Progress: About 50 percent of the study area has been disturbed by mining. It is anticipated that mining will be completed and the land reclaimed into row crops by the end of June 1976. In addition to the mine cut itself (about 100 feet deep and 300 feet wide), mining operations have expanded to such extent that the main stream channel in the watershed has been diverted (by ditching) around the new operations. As yet, the chemistry of the system has not changed significantly, at least not towards acid generation, but the diversion has caused a large amount of sediment to be moved into downstream systems. Considerable background data has been collected on the systems both downstream and upstream of the mining. The natural drainage upstream of the operations will serve as an excellent control. It appears that the lake system is well enough isolated from the mining operations as to be unaffected by the current mining.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	For George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☒ AGENCY STAFF *(Intramural)*	4	F. A. Kilpatrick (703) 860-6846
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
49.0 K	76	0	May 75	June 77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA EPA-IAG-D6-E77B-BBX

TITLE OF PROJECT Development of Instrumentation and Techniques for Measuring Sediment Laden Stream

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Arthur G. Scott, Hydrologist, U.S. Geological Survey, Water Resources Div., National Center, Mail Stop 415, Reston, VA 22092 (703) 860-6837

Project Dir: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To develop, test, and field evaluate flumes, weirs, and other devices and means suitable for measuring sediment and debris laden flows, to develop an in-situ instrumentation system capable of measuring the mass concentration of sediment in water, to develop an acceptable sampler(s) for measuring the discharge of bedload sediment particles so as to permit the effects of energy development, particularly mining activities, on streams to be monitored.

Approach: Flumes, weirs, and other types of control structures are being developed, tested, and field evaluated in the areas of oil shale and coal mining. Photographic techniques are being investigated. A literature search will be made of commercially available suspended solids sensors compatible with the objective. One or two instruments will be selected for comprehensive laboratory tests. An automatic sampling and data logging system to operate in conjunction with the optimum sensor will then be designed. The complete package will be tested first under simulated field conditions. Promising direct-measuring bedload samplers will be calibrated to define their efficiencies under various conditions. The effects of such things as particle size, transport rate, bed form, hydraulic condition, sampler orientation, and degree of filling on sampler efficiency will be ascertained. Appropriate samplers will be modified and/or new samplers developed and subsequently tested and calibrated to provide improved operation.

Progress: Experimental weirs and flumes have been installed on the Belle Fouche River in Wyoming, on Piceance Creek in Colorado, and on a tributary of the North Fork of the Kentucky River, Kentucky. The state of the art in photographic techniques that might be applied to the problem of flow measurement is being assessed. Although the equipment survey is only partially complete, a Dynatrol density gage is being tested. One of the bedload samplers of primary interest is the Helley-Smith sampler, which is a pressure-difference-type sampler that has been used recently by several investigators.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Fc George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 2

PROJECT OFFICER P. E. Greeson (703) 860-6834

RESPONSIBLE ORGANIZATION U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
195K	76	3	April 75	April 80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIC
EPA
EPA-IAG-D6-E77B-BBX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of Methods for Characterizing and Monitoring Levels of Chronic Toxicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Harry V. Leland, Biologist, U.S. Geological Survey, Water Resources Div., 345 Middlefield Road, Menlo Park, CA 94025 (415) 323-2292

Project Dir: G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Standard methods for characterizing and monitoring toxic substances at sublethal concentrations in aquatic ecosystems are not available. The general objective of this investigation is to determine, through detailed studies of organisms, simplified (model) ecosystems and natural (field) sites, the extent to which trace contaminants (especially trace metals) in different aquatic environments are available for biological uptake, influence the production and structure of plant assemblages, affect the growth and production of animals, and thus determine the trophic relationships and composition of aquatic communities.

Approach: Reservoirs of trace contaminants in aquatic environments for bioaccumulation and the physico-chemical factors influencing solute metal availability and toxicity will be examined. Methods of measuring responses of aquatic communities to trace contaminants that are applicable to water quality monitoring programs will be evaluated. Field studies in general will be conducted to verify results of laboratory experiments and to suggest problems needing further study. The reliability of monitoring methods for detecting population and community changes due to the presence of trace contaminants will also be determined.

Progress: An intensive field calibration of the extraction techniques found most useful in laboratory studies has begun. Sediments and deposit-feeders (two clam species and two polychaete species) have been collected from 15 sites in San Francisco Bay and analyzed for Ag, Cu, Zn, Fe, and Mn. Several of the sites have been visited at different seasons and two sites have been sampled intensively as a function of time. Because of the complexity of metal-sediment-biota interactions in San Francisco Bay, more data collection is necessary before final conclusions are possible.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	For George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.: 3

PROJECT OFFICER: P. E. Greeson (703) 860-6834

RESPONSIBLE ORGANIZATION: U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
90.0K	76	3	April75	April 80

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Instrumentation for High-Volume Analysis of Petrochemical and Associated Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: A. Beetum, Hydrologist, U.S. Geological Survey, Water Resources Div., National Center, Mail Stop 412, Reston, VA 22092 (703) 860-6834

Project Dir: G. H. Davis, Research Hydrologist. (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Develop guidelines to be used by management in choosing equipment for high-volume analysis of petrochemical and associated compounds. In addition, consideration of analytical methods to be used and software or hardware for data processing to be used in choosing suitable equipment for research and development in automation. To develop guidelines to permit managements choices consistent with longer term goals to fully automate with intermediate steps.

Approach: Plan a reasonable automated set-up that would maintain or reduce the standard error of estimate on analytical data, double analytical output, and reduce manpower requirements by 25 percent in comparison to that required presently. Give several procedures where milestones can be reached as subdivisions of total goal. Contract or inhouse prepare detailed specifications for equipment, software and data management system for each milestone. Initiate individual contracts to acquire equipment, software and data management system for group or class instrument selected as a milestone.

Progress: Phase one to study the feasibility of laboratory automation was completed, phase two (system specifications) is in process. The remaining phases are implementation and installation, and then the system evaluation when all components are installed. A phase one recommendation was acquisition of integrated inhouse computer facilities including data management and state of the art computer-integrated gas chromatographic and GC-MS systems. These systems should be operational before proceeding with development of beyond state of art instruments while current studies to plan and write the software for the data management computers is in process.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR For George H. Davis	DATE Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	P. E. Greeson (703) 860-6834
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
95K	76	3	April 75	April 80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E77B-BBY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Water Quality and Geochemistry of Shallow Aquifers of Piceance Creek, Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	Stanley F. Robson, Hydrologist, USGS, Lakewood, Colorado 303 234-3815
Project Director:	George H. Davis, National Center, Reston, Virginia 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objectives of the project are to collect detailed chemical analysis of the relatively shallow ground waters that may be impacted by mining for oil shale and associated minerals, principally in the Piceance and Yellow Creek basins of Colorado. The study serves to support a portion of an initial effort to improve predictive geohydrologic and chemical models that may better evaluate the impact of oil shale mining on the hydrologic regime of the Piceance basin. The total effort is designed to develop the data base and analytical capability required to make evaluations. The existing state of chemical equilibrium must be documented and studies of water quality made to predict effects of dewatering on water chemistry.

Approach: Water samples will be collected from approximately ten new wells and many springs located in the Piceance Creek basin. Chemical analyses for a broad suite of parameters will be conducted on selected samples.

Progress: Chemical analyses of water from 10 wells and 48 springs were analyzed and are being used to identify the source and distribution of major and minor ionic species in the Green River Formation. The dissolution of Nahcolite ($NaHCO_3$) and the sources of fluoride, boron, lithium, and barium are of particular concern. A complete list of chemical constituents are given in the memorandum of agreement. Copies of the chemical analyses are sent to the U.S. Environmental Protection Agency periodically. A quasi-three-dimensional solute transport model of the ground-water basin was constructed but could not be properly calibrated. The solute transport model indicates that the distribution of interaquifer flow calculated by a previous flow model produces about 10 times too much mass discharge to Yellow and Piceance Creeks. Data is being compiled and analyzed for use in constructing a profile-oriented solute transport model.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H Davis George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
☒	AGENCY STAFF (Intramural)	1	F. A. Kilpatrick (703) 860-6846
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
10.0	76	3	April, 1975	1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA **EPA-IAG-D6-E77B-BBY**

TITLE OF PROJECT
Collection of Geochemical Data in the Piceance Creek Structural Basin of Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

George Saulnizr, Principal Investigator, USGS, Water Resources Div., Colo. District Off.
Denver Federal Center, Denver, Colorado 80225
J.E. Bieszcker, Project Supervisor, (Same as above)

NAME AND ADDRESS OF APPLICANT INSTITUTION

J.E. Bieszcke, (Same as above)

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is the collection and analyzis of geochemical data on the relatively shallow ground waters that may be impacted by the extraction of oil shale in the Piceance and Yellow Creek Basins of Colorado. Water samples will be collected from approximately twelve wells and many springs. Chemical analysis for approximately thirty perameters will be collected on selected samples. Data will be used to refine predictive models of resultant water quality both for those waters encountered by mining operations and Niok waters centering surface drainages and springs and seeps.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER **F. A. Kilpatrick**
☒	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION **USGS**
☐	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE **Not specified**

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Quality of Water in Underground Coal Mines of Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	Dennis A. Wentz, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Mail Stop 415, Box 25046, Lakewood, CO 80225 (303) 2343815
Project Dir:	G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Water-quality problems resulting from the development of coal resources in general are presently of great interest. However, the statutory environmental restrictions regarding underground coal mines are far less complex than those for a surface mine. Hence, it is possible that in some locations mining may be by underground methods. Data relating to such situations in Colorado are largely nonexistent, thus the need for the proposed work.

Approach: Proposed field work would include collection of the following data: (1) physical--pH, water temperature, specific conductance, dissolved oxygen concentration, and discharge; (2) chemical--0.45 μ filtered samples will be collected at all sites. In instances where much suspended material is observed, unfiltered samples will also be obtained. Chemical analyses will include major cations and anions, organic carbon, nutrients, Radium-226, aluminum, antimony, arsenic, boron, cadmium, chromium, copper, lead, lithium, mercury, molybdenum, selenium, vanadium, and zinc. Based on previous studies conducted in the areas of interest, it is estimated that a maximum of 40 sites in Colorado would require sampling. The first year's efforts would be limited to sampling about 20 coal mines located in the North Fork of the Gunnison River drainage basin, primarily in Gunnison and Delta Counties.

Progress: All planning for data collection and analysis including sample-site selection has been completed. Sample collection will commence during the second week in September 1976. Data collection should be completed by November 1, 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2	F. A. Kilpatrick (703) 860-6846
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
10.0	76	0	June 76	June 77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)

SSIE

EPA
EPA-IAG-D6-E77B-BBY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Shallow Ground-Water Reconnaissance of Fort Union between Yellowstone and Missouri Rivers in Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. (406) 449-5011, ext. 5302

Principal Investigator: Don Coffin, Hydrologist, U.S. Geological Survey, Water Resources Div., P.O. Box 1696, 421 Federal Bldg., 316 N. Park St., Helena, MT 59601

Project Director: George H. Davis, USGS, National Center, Reston, VA 22092
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to produce and calibrate a simulation technique that projects the impact of large-scale surface mining of energy fuels in southeastern Montana on the shallow ground-water and surface-water systems. The study involves the collection of physical and chemical data from existing wells and from springs and seeps. The effort would be directed at geographical areas where coal is most likely to be developed, in the Yellowstone River basin and the Upper Missouri River basin near the Fort Peck Reservoir.

Approach: Initial efforts will locate existing wells in the area of eastern Montana between the Yellowstone and Missouri Rivers. Field efforts will then involve final selection of representative wells and sampling. Water levels will be measured to discover gross differences in the potentiometric surface and maps will be prepared showing this surface. Modified pumping tests may be run if pumps and observation wells are available. Samples of aquifer water will be collected and analyzed as shown in the attached table.

Progress: Approximately 5,000 well records filed with the Montana Dept. of Natural Resources & Conservation have been obtained for the coal rich areas of McCone, Richland Dawson, and Prairie Counties Montana. About 500 selected wells in McCone County have been inventoried (location accurately determined, depth and water level measured) and about 50 water samples have been collected for chemical analyses. The well inventory is complete in the Circle West area, which is the area where coal mining appears most imminent. Field work is extending to nearby areas where coal is known to exist.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	4	F. A. Kilpatrick (703) 860-6846
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
16.5	76	zero	April, 1975	April, 1976

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)

SSIE

EPA

EPA-IAG-D6-E77B-BBY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Reconnaissance of Surface and Ground Water System in Eastern Utah to Evaluate Coal Mining and Related Energy Activities

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. (801) 524-5663

Principal Investigator: James C. Mandorff, Hydrologist, U.S. Geological Survey, Water Resources Div., 8002 Federal Bldg., 125 So. State St., Salt Lake City, UT 84138
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, 8002 Federal Bldg., 125 South State Street,
Salt Lake City, Utah 84138 801 524-5654

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress,(200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect and coordinate the collection of baseline geohydrologic and geochemical data in an area of the principal coal resources in eastern and southwestern Utah to facilitate and improve efforts to describ the mechanisms determining impacts of mining on the shallow and moderately deep ground water and surface-water systems. The study will, in cooperation with the Bureau of Land Management, involve a geologic and hydrologic reconnaissance type investigation in the geographical area generally drained by the Colorado River system in Utah. The purpose of the entire effort is to develop or refine an understanding of any important mechanisms that may relate coal mining, disturbed land reclamation, and subsequent coal preparation and use to any changes in the hydrologic regime and to develop therefrom a capability to predict such changes.

Approach: (1) Identification of the principal areas of probable concern in terms of mining and local use of coal and possible impacts of these activities on the hydrologic system, (2) determine what data are available to describe the hydrology of the shallow and intermediate aquifers and surface waters, (3) identify existing wells and inspect for usefulness in delineating the potentiometric surface of principal shallow aquifers, identifying structural controls on the system, and determining geochemical patterns. Water level data from these and previous investigations will be contoured. Water quality data from this and other investigations will be examined to determine whether selected data may also be contoured.

Progress: Samples from wells and streams in eastern Utah are being collecte for chemical analysis. Samples are also being collected from the coal regions in the Dirty Devil River drainage basin. These samples are being screened for possible trace-metal determinations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	6	F. A. Kilpatrick (703) 860-6846
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$25.0K	76	one	April, 1975	April, 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E77B-BBY

TITLE OF PROJECT
Hydrology of Coal Spoils Piles - Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	George H. Leavesley, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Mail Stop 415, Box 25046, Lakewood, CO 80225 (303) 234-3815
Project Dir:	G. H. Davis, Research Hydrologist, (address below) (703) 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Water-quality degradation potential of coal-mine spoils is currently of great interest. To adequately assess the impact of surface mining and to predict the effects of future mining on unmined basins, a hydrologic simulation model is required. The accuracy with which the model will predict water-quality changes in the spoils pile and the subsequent effect of the changes on the water resources of the basin is a function of how well the hydrology of coal-spoils piles is defined.

Approach: The hydrologic data collected during this study will be used to develop the water-quality component of a hydrologic model which will simulate the effects of coal-spoils piles on the hydrologic system.

Progress: Study site selection, lysimeter design selection, and a literature review are in progress. Site selection will be finalized in August. Equipment installation and data collection will commence as soon after site selection as possible.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	F. George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
8

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
U.S. Geological Survey

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
21.3	76	4	June 76	June 80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E778-BBZ

TITLE OF PROJECT Water Quality Monitoring in Yampa and Williams Fork River in Hayden-Craig, Colorado Area

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Richard Grozier, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Lakewood, CO 80225 (303) 234-5092
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect detailed physical, chemical, and selected biological data from the surface waters of the Yampa and Williams Fork Rivers that may be impacted by coal mining and associated power plant facilities in the Hayden-Craig, Colorado area. This study will initiate work in documenting the existing baseline water quality conditions in the study area to permit future assessment of possible impacts from coal development in the area.

Approach: Water quality monitoring will be conducted at the locations and for the parameters necessary to assess future impacts in the geographical study area. Flow measurements will be made at the time of sampling.

Progress Stream flow water quality monitoring equipment for stations on the Yampa and Williams Fork Rivers have been acquired. Data collection and analysis for an extensive suite of chemical and biological parameters was initiated in August, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
21.26K	76	3	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Water Quality Monitoring on White River, Parachute Creek and Logan Wash in Oil Shale Areas of Western Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Richard Crozier, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Lakewood, CO 80225 (303) 234-5092
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To collect detailed water quality data from selected surface waters in the areas of western Colorado likely to be impacted by oil shale development. The study will initiate several new water quality monitoring stations and supplement the parameter coverage at several existing stations. The total effort will aid in documenting the existing baseline water quality conditions in the oil shale area so that possible future impacts from oil shale development can be evaluated.

Approach: There are two existing USGS monitoring stations located upstream and downstream from the Federal oil shale leases on the White River; these stations will be supplemented for additional parameter coverage. The proposed Parachute Creek station will be established between two different oil shale projects and upstream from major irrigation diversions to provide baseline water quality data and monitor future impacts from oil shale development. The station proposed for Logan Wash will provide baseline data used to evaluate the water quality impacts of in situ oil shale development in that specific drainage.

Progress: Stream flow water quality monitoring equipment for the Parachute Creek and Logan Wash stations have been acquired. Data collection and analysis for an extensive suite of parameters was initiated in August, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
George H. Davis

DATE
Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25.8K	76	3	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE

EPA-IAG-D6-E77B-BBZ

TITLE OF PROJECT
Surface Water Quality Monitoring in Energy Development Areas

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. (801) 524-5663

Principal Investigator: James C. Mandorff, Hydrologist, U.S. Geological Survey, Water Resources Div., 8002 Federal Bldg., 125 So. State St., Salt Lake City, UT 84138
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect water quality data in the oil shale and coal development areas of Utah. There are four existing USGS monitoring stations located in the oil shale and coal areas and these stations will be supplemented for additional parameter coverage. Along with the monitoring of physical-chemical parameters, a biological monitoring program will also be initiated. The total effort will aid in documenting the existing baseline water quality conditions in the oil shale and coal development areas so that possible future impacts can be evaluated.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Utah.

Progress: Monthly samples are obtained at each of four gaging stations as follows:

1. Field measurements of temperature, specific conductance, pH, streamflow, dissolved oxygen, and alkalinity: monthly
2. Chemical analyses of all major ions: monthly
3. Nutrients: monthly
4. Total organic carbon and dissolved organic carbon: monthly
5. Total trace metals and dissolved trace metals: As, Al, Be, Cd, Cr, Cu, Fe, Pb, Li, Mn, Hg, Mo, Ni, Se, V, and Zn: quarterly
6. Phytoplankton: monthly
7. Periphyton: quarterly
8. Suspended Sediment and turbidity: monthly

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
George H. Davis

DATE
Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
19.7K	76	3	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E77B-BBZ

TITLE OF PROJECT
Collection of Geohydrologic and Geochemical Data in the Dirty Devil Drainage of S. Utah.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Kidd Waddel, Principal Investigator
Ted Arnow, Project Supervisor

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
125 South State Street
Salt Lake City, Utah 84138

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to collect and evaluate baseline geohydrologic and geochemical data in an area of the principal coal resource in eastern and southeastern Utah so as to facilitate efforts to describe the impacts of mining on the shallow and moderately deep ground water and surface water systems. The general geographical area is that drained by the Colorado River system in Utah with emphasis on the Dirty Devil drainage system and other principal basins where every development is scheduled and where such development may affect the water resource. The effort will involve consultation with site-specific investigators, identification of and measurements at existing wells and springs; installation of a limited number of wells at critical locations and appropriate aquifer analyses; analysis of ground and surface water quality data, and additional surface water sampling.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER F. A. Kilpatrick
X	AGENCY STAFF *(Intramural)*	4	RESPONSIBLE ORGANIZATION Interior, USGS
	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 1975	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Surface Water Quality Monitoring in the Yellowstone River and Its Tributaries in Northern Great Plains Coal Region of Eastern Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Grady L. Moore, Hydrologist, U.S. Geological Survey, Water Resources Div., 421 Federal Bldg., 316 N. Park St., Helena, MT 59601 (406)449-5011-ext. 5263
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to continue the surface water quality monitoring program established with the USGS in 1974. Due to variation in climatic conditions, it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is accomplished in part by the continuation of the previously established 8-station monitoring network to provide a more objective basis for evaluating the possible impacts of energy development activities on surface water quality in the Yellowstone River coal region of Eastern Montana. It should be noted that there are many other water quality stations established in the area and that the EPA-USGS program is an integralpart of the overall water quality sampling network.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Montana.

Progress: Collection of the agreed upon data is continuing at seven stations on the Yellowstone River and a station on the Tongue River below Hanging Woman Creek.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*: N/A
SIGNATURE OF PRINCIPAL INVESTIGATOR: George H. Davis
DATE: Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 5
PROJECT OFFICER: F. A. Kilpatrick (703) 860-6846
RESPONSIBLE ORGANIZATION: USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30.2K	76	3	April, 1975	April 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Surface Water Quality Monitoring on Tributaries of the Yellowstone River in the....

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
....Powder River Coal Region, Wyoming

Sam W. West, Project Supervisor

NAME AND ADDRESS OF APPLICANT INSTITUTION
USDI Geological Survey, Wyoming District Office
P.O. Box 2087, Cheyenne, Wyoming 82001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Problem

Lack of sufficient baseline water quality data to monitor and evaluate the possible impact of energy development activities on the tributaries of the Yellowstone River in the Powder River Coal Region.

Objectives

To obtain necessary baseline data to monitor and evaluate the energy activities on surface water quality of the tributaries of the Yellowstone River.

Approach

Under a Memorandum of Agreement with the USGS the USGS will sample and analyze the surface water at seven stations. The station location, sampling frequency and parameter coverage are as shown in the attached table. It should be noted that there are many other water quality sampling stations established in the area and that the EPA-USGS program is an integral part of the overall water quality sampling network.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER F. A. Kilpatrick
X	AGENCY STAFF *(Intramural)*	5	RESPONSIBLE ORGANIZATION Interior, USGS
	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76		1975	1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Collection of Geohydrologic and Geochemical Data in the Northern Yellowstone River...

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

...and Missouri River
Drainages of Montana.

Don Coffin, Principal Investigator.
George Pike, Project Supervisor

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division, P.O. Box 1696, Helena, Montana,
59601

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To provide basic geohydrologic and geochemical data in the Northern Yellowstone River and Missouri River drainages of Montana with emphasis on potential coal development areas (particularly Circle, Montana). The effort will involve the inventorying of wells in four Montana counties, a general hydrogeologic analysis and appropriate mapping; water level measurements; drilling of wells; aquifer tests and analyses; and ground water quality analyses.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
☒ AGENCY STAFF (Intramural)	5	F. A. Kilpatrick
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		Interior, USGS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76		1975	1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E77B-BBZ

TITLE OF PROJECT Water Quality Monitoring of Missouri River and Its Tributaries in Northern Great Plains of North Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. (701) 255-4011, ext. 502

Principal Investigator: William E. Harkness, Hydrologist, U.S. Geological Survey, Water Resources Div., Rm. 332, New Federal Bldg., Third St. & Rosser Ave., Bismarck, N.Dak. 58501
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to continue the surface water quality monitoring program established with the USGS in 1974. Due to variation in climatic conditions it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is accomplished in part by the continuation of the previously established four station monitoring network and supplementing an additional two stations to provide a more objective basis for evaluating the possible impacts of energy development activities on surface water quality in the Missouri River coal region of western North Dakota. To monitor possible impacts on aquatic ecosystems the study is to be expanded to include the establishment of a biological monitoring program. It should be noted that there are many other water quality sampling stations established in the area and that the EPA-USGS program is an integral part of the overall water quality sampling network.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of North Dakota.

Progress: Samples for a complete suite of parameters are being collected and analyzed at the six sites. Sediment sampling equipment has been obtained as needed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 7

PROJECT OFFICER F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
22.0 K	76	3	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Surface Water Quality Monitoring for energy Impacted Areas in the Powder River...

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
...Coal Region and the Green River Basin, Wyoming

Sam W.West, Project Supervisor

NAME AND ADDRESS OF APPLICANT INSTITUTION
USDI, Geological Survey, Wyoming District Office
P.O. Box 2037
Cheyenne, Wyoming 82001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Problem

Lack of Sufficient baseline water quality data to monitor and evaluate the possible impact of energy development activities on the waters of the Powder and Green River Basin and their tributaries.

Objectives

To obtain necessary baseline data to monitor and evaluate the energy activities on surface water quality in the Powder and Green River Basin and their tributaries.

Approach

Under a Memorandum of Agreement with the USGS the USGS will sample and analyze the surface water at 14 stations. The station location, sampling frequency and parameter coverage are as shown in the attached table. It should be noted that there are many other water quality sampling stations established in the area and that the EPA-USGS program is an integral part of the overall water quality sampling network.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
8

PROJECT OFFICER
F. A. Kilpatrick

RESPONSIBLE ORGANIZATION
Interior, USGS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76		1975	1977

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 16, AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E77B-BBZ

TITLE OF PROJECT Establishment of New Surface Water Quality Monitoring Stations in the Powder and Green Rivers of Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

(307) 778-2220, ext. 2111
Principal Investigator: Fred C. Boner, Hydrologist, U.S. Geological Survey, Water Resources Div., 4015 Warren Ave., Cheyenne, WY 82081
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Mail Stop 407
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to augment a seven station surface water quality monitoring program established in 1974 with the addition of 14 new stations in energy impact areas of the Powder River coal region and Green River basin in Wyoming. This comprehensive monitoring network is designed to provide a more objective basis for evaluating the possible impacts of energy development activities on the water resources of Wyoming. The subject monitoring program was developed with assistance from the Wyoming Department of Environmental Quality, Water Quality Division.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Wyoming.

Progress: A new expanded sampling program is in progress and on schedule. To improve quality control, one man has been assigned specifically to this sampling program. The water quality data for the 1975 water-year report are complete.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR George H. Davis	DATE Oct. 5, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 8

PROJECT OFFICER
F. A. Kilpatrick (703) 860-6846

RESPONSIBLE ORGANIZATION
USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
98.2 K	76	3	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

B. ENVIRONMENTAL TRANSPORT PROCESSES

TABLE OF CONTENTS

Environmental Transport Processes

Agency	Page
EPA	113
ERDA	114-122
NOAA	123
TVA	124-129

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)

SSIE

EPA
CHD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: MINERALOGY OF OVERBURDEN AS RELATED TO GROUNDWATER DEGRADATION IN THE STRIP MINING OF COAL

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

DEAN L. KLOEPPER - Director, Energy Resources Division, CSMRI
JOHN S. FRYBERGER - Director, Ground Water Consulting Activities, Engineering Enterprises
BOB NEWPORT - Project Officer, EPA, P. O. Box 1198, Ada, OK 74820

NAME AND ADDRESS OF APPLICANT INSTITUTION

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
Post Office Box 112
Golden, Colorado 80401

SUMMARY OF PROPOSED WORK — (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) OBJECTIVE: The objective is to develop a method of predicting potential ground water degradation in strip coal mining on the basis of the mineralogy of the overburden.

(2) APPROACH: The approach is to determine the mineralogy of cores in undisturbed overburden adjacent to spoil piles which have undergone extensive chemical and biological weathering. Extensive ground water quality data will be gathered from wells drilled through and down-dip from spoil piles. Using this data base, a method of predicting ground water quality in post coal strip mining operations will be developed.

(3) CURRENT PROGRESS: This project was funded on December 22, 1975. Due to adverse climatical conditions in N.W. Colorado, initial drilling, coring and completion operations were delayed until March 22, 1976. Coring operations have been particularly successful except in spoil piles where high percentage core recovery in this unconsolidated material has been difficult to attain.

Portable well pumping and sampling equipment utilizing expandable packers for zone isolation has been successfully demonstrated. Lysimeters and associated fluid recovery systems have been installed in selected wells. Well sampling was begun in June 1976. Analytical data generated from the initial samples will consist of over 45 parameters from approximately 25 samples. Mineralogy of core samples are being determined utilizing X-ray diffraction and X-ray fluorescence. The first interim report on this project is on schedule and will be forthcoming in October 1976.

A grant amendment, R-804162-01-01, is directed toward expanding the "Scope of Work" outlined in existing Grant 804162-01. This amendment will permit several additional mining sites to be studied, thus broadening the data base to include varying mineralogical and climatological conditions and strengthening the accuracy and applicability of the predictive nature of findings formulated in the original grant.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (IN-HOUSE)
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.: 1

PROJECT OFFICER: Robert Newport

RESPONSIBLE ORGANIZATION: RSKERL - Ada

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76		12/75	10/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E681-BCD

TITLE OF PROJECT
Effects of Cooling Towers on Weather

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:	Steven R. Hanna	Research Meteorologist
	Rayford P. Hosker	Physical Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION
Atmospheric Turbulence & Diffusion Lab.
P.O. Box E
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. The objectives of this project are to study the influence of cooling tower geometry on a plume and to develop and test numerical cloud growth model for single cooling tower plumes.

2. A small meteorological wind tunnel with 1 m^2 cross section will be installed and tested, and multiple plume interaction studies will be designed. The ATDL numerical cloud growth model will be applied to cooling tower plumes at power plants where observation programs are currently underway.

3. The wind tunnel has been received, the building plans drawn, and the tunnel should be ready for testing by Jan. 1, 1977. The literature on modeling studies of cooling tower plumes was studied and a review written. The numerical cloud growth model was verified using observations from cooling towers at the Rancho Seco power plant and the John E. Amos power plant. It is now being applied to towers at Chalk Point, Md.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
R. P. Hosker Jr.
Steven R. Hanna

DATE
Oct. 7, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
D. Heyward Hamilton, Jr.

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$90,000	76		June 1976	June 1978

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCD

TITLE OF PROJECT
Effects of Entrainment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. C. Coutant
Environmental Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Key Objective: To determine the relationships between mortality of fish eggs and larvae and stresses (fluid induced, thermal, chemical, mechanical) encountered in power plant cooling systems.

Critical Objectives: 1. To evaluate the biological effect of condenser tube passage, 2. To evaluate the biological effect of the pump, 3. To evaluate the biological effect of the entire condenser cooling system.

Specific Objectives: 1. Using engineering evaluation, evaluate the mechanical and hydraulic characteristics of power station pumps that contribute to damage of fish eggs and larvae (by October 1977). 2. Build a power plant simulator (loop) before the 1977 fish spawning season. 3. Spawn and rear sufficient fish so experiments can be satisfactorily analyzed. 4. Determine the survival of fish eggs and larvae after passage through a variety of test conditions (begin experiments in April, 1977; completion of 1st experimental series by June 1977). 5. Determine if entrainment increases susceptibility to predation by larger fish (begin experiments in April, 1977; completion of 1st experimental series by June 1977). 6. Define the impact of entrainment on important plankton species at offshore power stations (begin experiments in July 1977; completion of 1st series by September 1977). 7. Report progress, results, and conclusions in a timely manner.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
CCCoutant

DATE
12 Oct '76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
D. Heyward Hamilton, Jr.

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*
$200,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE 12/77
continuing

*Funds approximate not for citation. 66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0084

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCD

TITLE OF PROJECT
Effect of Entrainment in Cooling Systems on Fish Eggs and Larvae

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. Charles C. Coutant, Project Supervisor, Environmental Sciences Division
(615-483-8611, ext. 3-6617)
Dr. J. Samuel Suffern, Research Associate, Environmental Sciences Division
(615-483-8611, ext. 3-1591)
Mr. Robert J. Kedl, Research Engineer, Reactor Division (615-483-8611, ext. 3-1196)

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to determine the location in a simulated power plant condenser system where physical damage is done to small aquatic organisms, principally fish eggs and larvae, that are entrained in cooling water. The engineering objective is to provide design criteria for condenser piping and pumps that will minimize damages.

The approach is to pass test organisms through a simulated condenser cooling system and to observe immediate and latent mortality, or behavioral changes that could affect survival. Emphasis will be on the pump design in current experiments since previous work has concentrated on the condenser. Effects will be associated with specific features of pump design and operation where feasible, e.g. specific speed, and net positive suction head. A redesigned simulated condenser system is being constructed for experimentation in the spring of 1976.

Marine and freshwater organisms will be tested as available for collection or laboratory culture.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N.A.

SIGNATURE OF PRINCIPAL INVESTIGATOR
CCoutant

DATE
26 Sept '75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
D. Heyward Hamilton, Jr.

RESPONSIBLE ORGANIZATION
ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250 K	76		7/75	2/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 26A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE.

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCF

TITLE OF PROJECT
Transport and Dispersion of Refinery Wastes in Freshwater Coastal Regions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
W. Harrison - Project Director, Energy and Environmental Systems Division
D. McCown - Physical Oceanographer, Energy and Environmental Systems Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The dynamics of oil-fouled receiving waters will be examined in a series of experiments to be conducted off the Calumet Region of Illinois and Indiana, in southwestern Lake Michigan. Here, five oil refineries discharge oily processing water into the lake via the Indiana Harbor Canal. In a given experiment, a quantity of Canal water will be tagged with a small amount of an inert, non-toxic rare earth in aqueous solution. At the same time and place a quantity of oily refinery waste will be released; this waste will have been tagged with an oil-soluble solution of a different rare earth. (Rare earths form organic complexes which are soluble in oil). Both tagged quantities will move out the canal and into the lake, dispersing in the normal fashion. The sample-station layout in the canal will be fixed from experiment to experiment. In the lake, however, the sample-station layout will be unique to each experiment and will be determined by the observed limits of the polluted-water plume emanating from Indiana Harbor. The vertical distribution of the oily wastes within the dispersing water mass will be assessed by sampling the oily surface film, water at the one-meter depth, and water one meter above the bottom at each sampling station in the area of plume dispersion. Water temperature data will be taken at all sampling points, as well, because the IHC water forms a thermal plume as it moves into Lake Michigan. Samples will be analyzed for rare-earth concentrations by neutron activation analysis. This technique permits determination of the environmental concentration of each rare earth at levels as low as 10^{-10} g/unit of sampling (usually 7 ml). Rare-earth elements such as dysprosium, lanthanum, gallium, terbium, gadolinium, and samarium will be used. Several experiments can be conducted without any chance of confusion by unwanted detection of prior injections.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
W. Harrison

DATE
October 28, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
J.O. Blanton

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$70,000	76			June 1980

*Funds approximate not for citation. ...16 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCF

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ecological Studies Around Natural Oil Seeps in the Santa Barbara Channel

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Spies, R.B., Principal Investigator, Environmental Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P.O. Box 808
Livermore, Ca. 94550

Phone (415) 447-1100 ext 4057

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to define the interaction of petroleum hydrocarbons with nearshore benthic communities in the Santa Barbara Channel utilizing the excellent natural laboratories provided by submarine oil seeps.

We have sampled the benthic communities at two fixed stations every two months since October 1975. One of these is in a natural oil seep and the other is located in a nearby non-seep area of similar depth and sediment composition. Our first two sets of samples indicate that there is basically the same community in the two areas, but that the seep station has about 15% more species and twice as many individuals.

We are formulating questions in the area of comparative population biology, reproductive cycles and microbial utilization.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Robert B. Spies	DATE 27 Oct. 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Clinton W. Hall
	AGENCY STAFF (Intramural)	#2	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION AAES/ERDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$140K		Three	June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	Form Approved OMB No. 158-R0081
	PROJECT NO. (Do not use this space) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681- BCF

TITLE OF PROJECT
Long-term effects of hydrocarbons on selected ecosystems and associated organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. W. Anderson, Ecosystems Department, Research Scientist, Marine Biology
R. M. Bean, Ecosystems Department, Research Scientist, Environmental Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory - Sequim, WA)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives and approaches of this research are described in the following three tasks: (1) effects of long-term, low-level petroleum hydrocarbon (PHC) contaminated water (source is Prudhoe crude oil) on the growth and reproduction of two sensitive crustaceans (amphipods and mysids) exposed for more than one generation. As part of this task, analytical methods will be developed and utilized in order to determine the levels of specific PHCs in water, tissue and sediment, (2) exchange of specific PHCs between oil, sediment, water and organisms from laboratory and field experiments using natural sediments and Prudhoe crude oil. A major phase of this research is to determine the availability of sediment-sorbed PHCs to deposit-feeding organisms, (3) alteration of PHCs in and on oiled sediments under natural (field) conditions and the effect on recruitment of benthic organisms. The changes in compositional characteristics of PHC in oiled sediments placed in the intertidal zone will be compared to settlement and growth of benthic animals in this substrate.

Progress Over the Past 12 Months: Task 1. Cultures of both mysids and amphipods have been maintained over a period of 7 months. Offspring have been reared to near maturity. Large numbers of each species are being exposed to a constant, flowing level of 0.2 ppm total hydrocarbons, and this will continue for a period of several months while growth and reproductive parameters are measured. An efficient and valid system for sampling exposure water, employing a resin column, has been developed and is in use. A method for determining the concentration of non-cyclic aromatics in the system is in press (Bean and Blaylock, 1977). Task 2. Results of experiments on the uptake of naphthalenes from water and sediment exposed to oil (in 2 ways) by the peanut worm, Phascolosoma agassizii, are also in press (Anderson, et al., 1977). Experience and knowledge gained in these studies are aiding similar research on the bioavailability of PHCs on sediment for the clam Macoma. More detailed analyses of PHCs in sediment and tissues have been developed. Task 3. Oiled sediments in trays have been in the field for 7 months and

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Jack W. Anderson	DATE 10-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 3	PROJECT OFFICER Nell W. Fraser RESPONSIBLE ORGANIZATION ERDA

FUNDS OBLIGATED 313,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. One	STARTING DATE 6-1-75	ESTIMATED COMPLETION DATE 5-31-78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCF

TITLE OF PROJECT
Long-term effects of hydrocarbons on selected ecosystems and associated organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
J. W. Anderson, Ecosystems Department, Research Scientist, Marine Biology
R. M. Bean, Ecosystems Department, Research Scientist, Environmental Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION
Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory - Sequim, WA)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(continuation)

several samples have been taken for determination of PHC composition. Two samples have been taken for analysis of the numbers of species and individuals present in control and oiled sediment.

Each task will require additional research over the next 12 months to provide more complete answers to the questions posed in the objectives.

References:

Anderson, J. W., L. J. Moore, J. W. Blaylock, D. L. Woodruff, and S. L. Kiesser. 1977. Bioavailability of sediment-sorbed naphthalenes to the sipunculid worm, Phascolosoma agassizii. In: Proceedings of Symposium on Fate and Effects of Petroleum Hydrocarbons in Marine Ecosystems and Organisms, Seattle, November 10-12, 1976. (In Press.)

Bean, Roger M., and J. W. Blaylock. 1977. Characterization of volatile hydrocarbons in flowing seawater suspensions of Number 2 fuel oil. In: Proceedings of Symposium on Fate and Effects of Petroleum Hydrocarbons in Marine Ecosystems and Organisms, Seattle, November 10-12, 1976. (In press.)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Jack W. Anderson

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
N.W Fraser

RESPONSIBLE ORGANIZATION
ERDA

Page 2

FUNDS OBLIGATED
313,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
one

STARTING DATE
6-1-75

ESTIMATED COMPLETION DATE
5-31-78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA EPA-IAG-D6-E681-BCF

TITLE OF PROJECT
Transfer of Particulate Pollutants, Including Sediment Dispersed during offshore Const.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Gary C. Goldman, Project Head, Marine Ecology Division

Mr. Roberto L. Castro, Research Associate, Marine Ecology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Puerto Rico Center for Environmental and Energy Research
College Station
Mayaguez, Puerto Rico 00703

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall goal of this program is to determine the potential ecological effects resulting from possible offshore construction of a powerplant. These effects would be primarily the results of considerable resuspension of the sediment in the area.

The study area is the northern basin of the Cabo Rojo Platform, which is just west of the island of Puerto Rico, and about ten kilometers southwest of the city of Mayaguez, Puerto Rico.

The approach to the problem is to determine the chemical, physical, and dynamical properties of the sediment in the basin. This is to be done with both surface and subsurface sediment. The water current patterns will also be determined. These two parameters will be combined, if possible to produce a 'projected trajectory' of the sediment to help predict the ultimate location of the material, should it be subjected to the resuspension. Furthermore, the benthic community will be evaluated to attempt to predict the effects, if any, that the new sediment load may have on it. Trace metal analysis will be carried out on both the water and sediment in the basin to determine what effect, if any, will be seen chemically.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Marine Ecology	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 13 Oct 76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER J. O. Blanton
	AGENCY STAFF (Intramural)	3	RESPONSIBLE ORGANIZATION ERDA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250K	76	1	3/76	

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED

Reproduced from best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY	*Form Approved* *OMB No. 158-R0081*
NOTICE OF RESEARCH PROJECT	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681-BCF

TITLE OF PROJECT Transfer and dispersal of organic pollutants from an oil refinery into coastal waters.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M.D. Banus, Scientist II, Head of project; J. Castrillon, Scientist II

NAME AND ADDRESS OF APPLICANT INSTITUTION Marine Pollution Studies, Marine Ecology Div.
Center for Energy & Environment Research
College Station
Mayaguez, P.R. 00708

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: To determine the amounts and types of hydrocarbon pollutants in the air, water, sediments and various biological components of a tropical coastal ecosystem adjacent to the refinery-petrochemical complex at Guayanilla, P.R. To evaluate possible pathways for these hydrocarbons through the ecosystem, identify components which effectively store or degrade hydrocarbons and evalute effect of hydrocarbons on local commercial seafood. Finally, to develop and test a model of hydrocarbon transport applicable to tropical coasts to help predict impact of a refinery on an unpolluted coast.

Approach: A systematic sampling and analysis of air, water, sediments at potential sites of input from the chemical plants and over a down-current grid as compared to a pollution-free control. Determination of principal hydrocarbon species. Comparison of pollutant levels during wet and dry seasons. Hydrocarbon analyses on plankton, algae, benthic organisms, fish (two or more feeding types) and mangrove leaves and roots. Mangroves may be a major pool and pathway since the trees and associated organisms are in contact with air, water and sediments, since they are major energy convertors of the ecosystem and, since they are frequently in the border between the industrial complex and the coastal water. Laboratory studies on the weathering or degradation of hydrocarbons in tropical sea water and sediments. Use of analysis of variance and factor analysis to understand the relationship of hydrocarbon levels prior to developing a model.

First Year Plan: Set up sampling grid and schedule for water and sediments. Select and use suitable hydrocarbon extraction and determination methods. Attempt to identify major hydrocarbon components using mass-spectrograph. Start sampling and analysis of air and biological components of ecosystem.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED [illegible] Marine Ecology	SIGNATURE OF PRINCIPAL INVESTIGATOR Mario D Banus	DATE Oct. 11, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) ☒ [illegible] CONTRACT ☐ [illegible] GRANT	TASK NO. 3	PROJECT OFFICER J. O. Blanton	
		RESPONSIBLE ORGANIZATION ERDA	
FUNDS ALLOCATED [illegible] F.Y. 250K 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1	STARTING DATE 3/76	ESTIMATED COMPLETION DATE

EPA Form [illegible] REPLACES [illegible] FORM [illegible] WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E693-BEM

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Fate and Effects of Petroleum Hydrocarbons and Selected Toxic Metals in Selected Marine Ecosystems and Organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Douglas A. Wolfe, Project Director

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Environmental Research Laboratory
Boulder, Colorado 80302

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall approach of this project will be to study experimentally specific processes controlling the distribution, transport, and effects (both physiological and ecological) of petroleum hydrocarbons and selected toxic metals in subarctic coastal marine ecosystems to facilitate the assessment of the impacts of petroleum releases in this ecosystem type. The project includes four interdependent tasks with the following objectives:
a. Establish a national NOAA analytical capability for petroleum hydrocarbons and toxic metals in the marine environment for purposes of standardizing analytical techniques, providing intercalibration services and conducting routine analyses on a contract basis.
b. Identify information gaps in our current understanding of petroleum impacts on subarctic marine ecosystems and design a comprehensive program of laboratory and field research to fill these gaps with reference to a particular, as yet unspecified, study site to be located in a coastal portion of the Northeast Gulf of Alaska.
c. Select, on a priority basis, and conduct specific laboratory experiments on fate and effects of metals and hydrocarbons.
d. Conduct controlled experimental ecosystem research to determine changes at the ecosystem level and to test our ability to predict ecological and biological impacts of petroleum in subarctic ecosystems.
Current approaches or progress are, by objective, as follows:
a. Equipment has been purchased and routine analyses of petroleum hydrocarbons in environmental samples are underway at the NOAA National Marine Fisheries Service Northwest Fisheries Center in Seattle, Washington.
b. A major symposium/workshop was scheduled for November 10-12, 1976 in Seattle, WA to identify current information status and research requirements.
c. Laboratory experiments are underway to examine the interactions between PCBs and petroleum hydrocarbons in juvenile salmon and to determine the effects of petroleum on trace metal distributions between sediments and sea water.
d. Feasibility studies and experimental design are underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Douglas A. Wolfe	DATE 1 October 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 1-4

PROJECT OFFICER: John W. Townsend, Jr.

RESPONSIBLE ORGANIZATION: NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
478K 119K	76 76TQ	3	1 August 1975	1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E721-BDL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Atmospheric Interaction Studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
J. F. Meagher (Principal Invest.), Research Anal.
O. Huff, L. Stockburger, G. Shannon, and
Elizabeth Bailey, Environmental Scientists

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objective of this project is to determine the chemical interactions of constituents of atmospheric emissions from coal-fired power plants with particular emphasis on ascertaining the rates of oxidation of SO_2. The ultimate goal is to develop the capability for predicting the concentrations of all major constituents of such emissions at various locations downwind. Instruments are carried by an aircraft to measure the fluxes of the constituents through the plume at a number of distances downwind. Pertinent meteorological parameters, such as temperature and humidity, vertical temperature profiles, wind speed and direction, and solar radiation are measured with instruments on the aircraft and a ground station. These data will be utilized to develop a plume chemistry model which will detail the plausible mechanisms and kinetics of chemical reactions occurring in the plume and the meteorological influences on these reactions so that the temporal and spatial distributions and fates of various plume constituents may be better understood and more accurately predicted. Chamber studies of stack gases are also being initiated to obtain some fundamental information on plume chemistry. Emphasis for the immediate future studies will be placed on obtaining rates of oxidation of SO_2 in stack gas.

A preliminary study (four sampling days) was conducted in December 1975 - January 1976 at TVA's Cumberland Steam Plant. This plant has two 1300 MW units each fitted with a 1000-foot stack. A second detailed study is planned for this plant in the fall of 1976.

Design of the reaction chamber has been completed and bids are currently being sought for construction.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	James F. Meagher	9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
174 K	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-BDL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Regional Atmospheric Transport of Coal-Fired Power Plant Emissions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
Vinaya Sharma (Principal Invest.), Res. Analyst
Lawrence M. Reisinger, Environ. Scientist

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The sulfur dioxide/sulfate issue requires development of a scientific data base to delineate regional effects of coal-fired power plant emissions, and characterization and quantification of the mechanisms of long-range transport of emissions. A long-range transport model describing the conservation balance of SO_2/sulfate complex is being developed and applied to a meso-scale region (~1000 km) centered over the Tennessee Valley watershed. Among factors being considered are advection by wind field, air parcel trajectories, diffusion by atmospheric turbulence, source/sink mechanisms, and chemical transformations. A regional SO_2 emissions inventory has been acquired and maintained by continual updating. A field study was conducted in the spring of 1976, and the data are being analyzed. This will be of utility in model development and preliminary assessment of the overall problem. During a later phase of the program, data input will be refined and comparison data will be obtained for model validation, and the model will be upgraded.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Vinaya Sharma

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	76	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D6-E721-BDM

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Evaluation and Improvement of Models Used for Radiological Impact Assessment of Gaseous Releases from Nuclear Power Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. James A. Oppold, Project Director, 401 Chestnut St., Rm. 201, Chattanooga, TN 37401 FTS 854-3175
P. H. Jenkins, Health Physicist, Radiological Hygiene Branch
R. L. Doty, Health Physicist, Radiological Hygiene Branch
W. H. Wilkie, Health Physicist, Radiological Hygiene Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut St., Rm. 268
Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives:

1. To evaluate and refine models used for radiological impact assessment of gaseous releases from nuclear power plants.
2. To evaluate and refine models used for radiological impact assessment of direct radiation from nuclear power plants.

Approach:

1. To place pressurized ionization chambers at various locations around the Browns Ferry Nuclear Plant, for various time periods.
2. To perform parametric analyses in conjunction with literature searches to improve the dispersion portion of the gaseous release model.
3. To refine models using available data on power levels, effluent releases, meteorological conditions, and environmental radiation levels.

Progress:

1. While Browns Ferry was down for repair, background radiation levels were measured at approximately 83 locations around the plant. A report on these measurements is nearing completion.
2. Models have been and are being developed to determine the presence and magnitude of the gaseous effluent plume.
3. As Browns Ferry returns to operation, additional field data are being collected.
4. Preliminary comparative analyses of available dispersion study data, parametric study results, and dispersion code results are underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Phillip H. Jenkins	9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	1	James A. Oppold
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$44K obl.; $44K est. exp.	1976	3 (through FY 1979)	May 7, 1975	August 31, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA EPA-IAG-D6-E721-**BDN**

TITLE OF PROJECT
Simulation of Thermal Dispersion and Fluid Mechanics at Critical Locations in Streams & Reservoi

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Richard J. Ruane, Supervisor, Spec. Proj. Staff, 401 Chestnut St., Rm. 246, Chattanooga, TN 37401 (615) 755-3167
William R. Waldrop, Res. Eng., Eng. Lab., P. O. Drawer E, Norris, TN 37828 (615) 494-7137
Richard C. Farmer, Consultant, Eng. Lab., P. O. Drawer E, Norris, TN 37828 (615) 494-7137

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, 401 Chestnut Street, Room 248, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study is to extend and verify a theoretical computer model of thermal effluents from power generating plants. Such effluents are generally three-dimensional and turbulent. The computer model which will be utilized is a three-dimensional unsteady finite difference technique. This model is unique in that the conservation equations of all three directions are solved in an efficient manner. Most previous models have attempted to describe a thermal effluent with two-dimensional equations or at the very most made restricting assumptions concerning transport in the third dimension.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Richard J. Ruane	9/29/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER William R. Nicholas

RESPONSIBLE ORGANIZATION TVA Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$31[illegible] est. exp	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E721-**BDS**

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Strip Mine Drainage Water Quality With Emphasis On Toxic Substances

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. R. Nicholas, Branch Chief, WQEB
R. J. Ruane, Supv., SPS
D. B. Cox, Env. Engr.
R. P. Betson, Hydrologist, WSDB of DWM
J. S. Crossman, Biologist, WQEB
W. C. Barr, Biologist, Fisheries Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority, 401 Chestnut Street, Room 267, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are to (1) identify the occurrence and significance of trace metals in a strip mined area; (2) calibrate existing regionalized hydrologic models using data from surface mined watersheds with several types of reclamation; (3) develop or extend nonpoint source water quality models so that the natural-area environmental loadings of important water quality constituents can be predicted; (4) relate the transport of significant trace metals and other important water quality constituents to the hydrology of small strip mined watersheds; (5) develop relationships between the chemical composition of strip mine overburden and the downstream transport of important constituents over and above the natural-area environmental levels; (6) relate the transport of important constituents to the structure and function of biological communities.

The goal of this project is to demonstrate methodologies for predicting the impact on downstream biotic communities, based upon the characteristics of the site to be mined.

Sampling programs have been established at an area-mined (Jamestown, Tennessee) and a contour-mined (New River Basin) site. In addition to routine water quality monitoring, storm event sampling has begun in the New River Basin and is planned for a site in the Jamestown area.

Biological data have now been collected for four months from five stations at the Jamestown site. These data have included baseline qualitative and quantitative information for periphyton and zoomacrobenthos plus downstream drift information for benthos.

Fisheries samples have been collected at four stations, two mined and two control, in the Jamestown area. These stations are sampled each four weeks, weather permitting.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
9/20/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER W. R. Nicholas
☐	AGENCY STAFF (Intramural)		
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Tennessee Valley Authority
☐	RESEARCH GRANT	1	

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$175,000	1976	3	5/7/75	8/1/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721- **BDT**

TITLE OF PROJECT
PRODUCTION OF ARTHROPOD PESTS AND VECTORS IN COAL STRIP MINE POOLS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Eugene Pickard, Entomologist, Water Quality and Ecology Branch (Princ. & Research Invest.
Dr. Joseph C. Cooney, Entomologist, Water Quality and Ecology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Monthly field surveys are being conducted to qualify and quantify arthropod composition in strip mine pools according to pond age classification. Primary considerations are to identify and quantify the vector and noxious species of arthropods present or to predict their appearance and importance as related to coal strip mining operations and seasonal changes. Six species representing two genera of mosquitoes have been collected from the ponds. A total of 18 families of insects have been collected by aquatic dip net and Ekman dredge sampling in the 9 study pools. Results from vegetation inventories have shown a paucity of plants, both in species and in numbers. *Typha latifolia* and *Scirpus cyperinus* were the dominant plants in the ponds. There appears to be no significant difference in the pH of the water among the study ponds.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Joseph C. Cooney
for Eugene Pickard

DATE
September 27, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
W. R. Nicholas, Chief, Water Quality & Ecol. Branch

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
32,000	76	3.0	9/75	FY 1981

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED.

C. HEALTH EFFECTS

TABLE OF CONTENTS

Health Effects

Agency	Page
EPA	130-181
ERDA	182-212
NIEHS	213-261
NIOSH	262-278

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA CKA

TITLE OF PROJECT
Improved Estimates of Pollutant Concentrations Associated With Adverse Health Effects

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION
Rockwell International Corporation - Air Monitoring Center

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to support in part the development and installation of instruments to monitor in a continuous manner sulfur dioxide, nitrogen dioxide, nitrogen oxide and ozone and to monitor on a 24-hour basis total suspended particulates and respirable particulates. These sets of instruments are to be installed at indicated sites throughout the United States and are to provide the Environmental Protection Agency with the types of data necessary for determining pollutant concentrations related to increases in adverse health parameters.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1A 2	David Hinton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		PSD, HERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$510K $18K	75 76A	1 year	7/1/75	12/30/76

EPA Form 5/60-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Effects of Exposure to Aerosols Associated with Coal Conversion and Coal Combustion

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Walter L. Crider, Project Officer, HERL, PSD, EAB
Ferris B. Benson, Chief EAB, HERL, PSD

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International Corporation, Air Monitoring Center, 2421A West Hillcrest Drive,
Newbury Park, California 91320

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) To monitor physical characteristics of aerosols and to obtain limited chemical composition of aerosols through the use of commercially available automatic instrumentation.
(2) To install automatic aerosol monitoring instruments in the Community Health Air Monitoring Program (CHAMP) System.
(3) A contract was awarded 7-1-75 to Rockwell Air Monitoring Center to select and install appropriate automatic aerosol monitoring instruments in a few selected CHAMP field stations and to integrate the data from these new instruments into the CHAMP data system. The work on this limited effort is scheduled for completion 7-1-76.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Walter L. Crider	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1A

PROJECT OFFICER
Walter L. Crider

RESPONSIBLE ORGANIZATION
HERL, PSD

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$1300	76		7/1/75	7/1/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

OMB [illegible] R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
CPA CKA

ITLE OF PROJECT
Aerosol Addition to Cleans

IVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER ROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Walter L. Crider
Acting Chief, Research Services Branch
Phone: (919) 549-8411 x2601

AME AND ADDRESS OF APPLICANT INSTITUTION

Environmental Research and Technology

IMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies sup-rting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor is to provide an aerosol generating, monitoring and control system for one laboratory in the CLEANS facility.

A competitive bid, const plus fee contract, will be negotiated for the design, installation and integration of this aerosol system. Performance requirements will be limited to water-soluble aerosols in the 0.1 to 1 μm diameter range.

A request for proposals will be prepared and advertised. The successful contractor must be responsible for the compatibility of the new aerosol system with the pre-existing CLEANS system. He also must provide for the stability of the aerosol generator in terms of the output homogeniety of aerosol distribution in the exposure zone of the laboratory, etc.

ENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, ntal, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1 A

PROJECT OFFICER Walter L. Crider (919) 549-8411 x2601

RESPONSIBLE ORGANIZATION Research Services Branch Clinical Studies Division, HERL

UNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$184.9K	75	1	June 1975	July 30, 1977
$425.6K	76			

Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIZ 75A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Stationary and Mobile Facilities for Study of Health Effects of Environmental Contaminants (CLEANS/CLEVER)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Edward Marsh
Project Director
Computer Sciences Corporation

NAME AND ADDRESS OF APPLICANT INSTITUTION

Computer Sciences Corporation
Falls Church, Virginia

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor is to complete the construction of the controlled environmental laboratory, physical facilities, and computer programming, with which to conduct performance tests to insure satisfactory completion of the CLEANS system.

The approach is to complete construction of these fixed facilities on site by April 1976.

These controlled environmental laboratories will be tested by the contractor without human subjects over the entire design range of gaseous pollutant exposure and environmental conditions. These tests will include manual control as well as automatic computer controlled and programmed control. After repeated demonstration of satisfactory performance of these facilities, tests will be started using human subjects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1A

PROJECT OFFICER

RESPONSIBLE ORGANIZATION RSB/CSD/HERL - RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$690K $265K	(74) (76)		5/73	8/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
CLEANS/CLEVER Operation and Maintenance

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Walter L. Crider
Chief
Research Services Branch, Clinical Studies Division
Health Effects Research Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION

Contract is being negotiated

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data. In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective:
To obtain a contractor to operate and maintain the CLEANS/CLEVER systems.

Approach:
Proposals will be evaluated and a contractor will be selected.

Current Plans:
A letter authorizing the successful bidder to start work will be issued during the month of August 1976. It is expected that this contractor will start developing a work plan, quality control plan and a safety plan for EPA approval. Actual operation and maintenance should start September, 1976. A final negotiated contract is expected by December,1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
AGENCY STAFF *(Intramural)*
XX NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
1A

PROJECT OFFICER Walter L. Crider
Walter L. Crider

RESPONSIBLE ORGANIZATION
RSB/CSD/HERL - RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETIC DATE
$81.4K $50K	76A 76		August,1976	On-Going

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Effects of Nitrogen Dioxide on Pulmonary Function in Human Subjects with Asthma and Chronic Bronchitis

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

H. David Kerr; M.D.
Associate Professor of Medicine
Division of Pulmonary Diseases

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Maryland
School of Medicine
Baltimore, Maryland

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study will investigate the physiological changes in cardiorespiratory parameters in patients with bronchial asthma and chronic bronchitis to two-hour exposures of 0.3-0.5 ppm nitrogen dioxide in clean air. Results from this investigation will provide data on the spectrum of pulmonary responses in two large classes of the population at risk. The data will aid HSL in further defining short-term adverse effects of this pollutant.

[illegible] University of Maryland, School of Med. Baltimore Maryland	SIGNATURE OF PRINCIPAL INVESTIGATOR Burt T Ketcham	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Brock Ketcham, M.D.
☐	AGENCY STAFF (Intramural)	1B	RESPONSIBLE ORGANIZATION USEPA/HERL/CSD/Physiology Branch
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$86.4K	1976		6/74	11/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Determine behavioral physiologic and metabolic effects for populations residing in communities where major shifts in pollutants are anticipated from coal conversion or coal combustion.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Policy decisions concerning energy production in the United States must consider among other factors, the effect of alternate techniques on the ambient exposure levels of various pollutants and consequent health effects. To address this issue, studies will be initiated to determine behavioral, physiologic and metabolic effects in populations residing in communities where major shifts in pollutants are anticipated from coal conversion or coal combustion. These studies will require better characterization of human exposure to pollutants such as sulfates, nitrates, and trace metals and will involve a major link with Task 1.

The following studies will be conducted as part of this task.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1.2
PROJECT OFFICER Jean G. French, Dr. P.H.
RESPONSIBLE ORGANIZATION RTP, N.C.

FUNDS OBLIGATED 545K
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.
STARTING DATE
ESTIMATED COMPLETION DATE

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Develop and test a model for the effect of changes in metropolitan air pollution levels on the health of high risk patients in Chicago

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Bertrm Carnow, University of Illinois, School of Public Health, P.. O. Box 6998
Chicago, Illinois 60680

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to develop, refine and test mathematical models to predict changes in acute and chronic health conditions associated with changes in air pollution. The effects of changes in concentrations of sulfur compounds are to be emphasized. Existent health effects data and air monitoring data will be used to develop and test the models. Finally prospective epidmiologic studies will be designed and conducted specifically to test the model.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1.2/1

PROJECT OFFICER Jean G. French, Dr.P.H. and Wilson Riggan, Ph. D.

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED 250K
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y. 2
STARTING DATE 12/75
ESTIMATED COMPLETION DATE 8/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Study the effects on asthmatics of pollutants resulting from converting to coal combustion in a power plant

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A group of asthmatics living in close proximity to a power plant will be followed for daily symptom reporting for three months prior to and 3 months after conversion from combustion of oil to coal in the power plant. Aerometric measurements will be taken during the same time period and health data will be correlated with aerometric data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1-2/2

PROJECT OFFICER Jean G. French, Dr. P. H.

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE 3/76

ESTIMATED COMPLETION DATE 4/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Study the relationships of airborne trace substance levels in a population living in close proximity to a new coal-fueled power plant

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Air, soil and surface water will be monitored for selected metals will be monitored with a 5 kilometer proximity of a power plant both before and after the conversion from oil to coal combustion in the plant. Some 200 persons representing both sexes and four age groups living within the same radius from the plant will have urine, blood, and hair samples analyzed for levels of aresenic. the trace metals twice before and three times after conversion from oil to coal combustion in the power plant. The emissions data will be compared with the pollutant burden data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 1.2/3

PROJECT OFFICER Jean G. French, Dr. P.H.

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
10K	76	1	6/76	6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Study health status of a population living in the immediate vicinity of a new coal gasification plant both before and during the operation of the plant.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK — (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to assess the adverse health effects which may be associated with exposure to emissions from a coal gasification plant. Air, soil and water surfaces will be monitored within 5 kilometers of a new coal gasification plant before and after the operation of the plant to determine the levels of certain gases, hydrocarbons, metals and other specific particulates. One-thousand households in the same area will be interviewed before and one year after the operation of the plant to establish disease patterns. Some 200 persons representing a cross-section of the larger study population will have blood, urine and hair samples analyzed for specific parameters twice before and twice after the plant becomes operational. Both disease symptomotology and biological specimens will be compared with emissions data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1.2/4

PROJECT OFFICER Jean G. French, Dr. P.H.

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$205K	76	2	4/76	3/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Study specific causes of morbidity and mortality in populations with long-term exposure to emissions from coal combustion

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK — (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to compare specific disease morbidity and mortality rates in a population with high exposure to coal combustion emissions for a prolonged period of time with rates in a comparable population without such exposure. Particular attention will be given to chronic respiratory disease, cardio-pulmonary disease, cancer of the lung and birth defects. In addition, unusual clustering of other disease states will be assessed in the exposed population compared to controls.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1.2/5

PROJECT OFFICER Wilson B. Riggan Ph.D. & Jean G. French

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50K	76	1	4/76	7/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Study the health effects from NO_2, CO and certain hydrocarbons in newly insulated homes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to determine if better insulation of homes will contribute to higher levels of certain indoor air pollutants with commensurate adverse health effects. Measurements of NO_2, CO and certain hydrocarbons will be taken at regular intervals both before and after the insulation of the home.

Biological specimens and information on certain symptom states will also be collected during the same time period.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 2-1/6

PROJECT OFFICER Jean G. French, Dr. P. H.

RESPONSIBLE ORGANIZATION RTP, N. C.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
350K	76	1	4/76	10/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY	*Form Approved* *OMB No. 158-R0081*
NOTICE OF RESEARCH PROJECT	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CKA

TITLE OF PROJECT

Development and Installation in CHAMP Stations of Equipment Designed to Provide Continuous Measurements of Atmospheric Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International Corporation - Air Monitoring Center

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to develop and install automatic aerosol monitoring instruments in the Community Health Air Monitoring Program System. This contract was awarded on July 1975 and should be completed by July 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER David Hinton
	AGENCY STAFF *(Intramural)*	3	RESPONSIBLE ORGANIZATION PSD, HERL
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$200K $733.5K	75 76	1 year	7/1/75	12/31/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Development of Sulfuric Acid Sampler - Phase I

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Robert L. Durfee - Management REsponsibility
James D. Barden - Project Manager & Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

Versar Inc.
6621 Electronic Drive
Springfield, Virginia

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This is a program of design and development leading to the fabrication and preliminary evaluation of a sulfuric acid sampler to be integrated with a Flame Photometric Detector (FPD) for the purpose of analyzing ambient sulfuric acid. The major design goal is to develop a Sampler (which when coupled with FPD) will render the analysis of sulfuric acid free of chemical interferences.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR James D. Barden	DATE 10-7-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☑ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 3	PROJECT OFFICER Paul J. Lamothe RESPONSIBLE ORGANIZATION EPA, ESRL, Research Triangle Park, N.C.

FUNDS OBLIGATED 16,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 9/30/76	ESTIMATED COMPLETION DATE 3/29/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT (a) Compare Pulmonary Carcinogenicity of Known Carcinogens with and without Added Airborne Respirable Particles (b) Evaluate the Influence of Added Gases & H_2SO_4 Mist:

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Professor Sidney Laskin
(914) 351-2300

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Environmental Medicine, New York University
550 First Avenue
New York, New York 10016

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objective of this contract is to study the response of animals exposed to combinations of environmental contaminants and known carcinogens. The combination of sulfuric acid mists and a known organic carcinogen, benzo(a)pyrene, will be investigated. The data generated from such a study would be vital to policy making and regulatory decisions of EPA by delineating the possible public health hazards of sulfuric acid mists. In addition, this study will provide information on the cofactor role of environmental trace metals in pulmonary carcinogenesis. The animal used is the male golden hamster. Hamsters will be exposed to sulfuric acid mists (100 mg/m^3) for life. In addition, appropriate groups of animals will receive intratracheal installation of benzo(a)pyrene - a known organic carcinogen. The particulate airborne materials like vanadium, lead or iron will also be studied. Two segments of this research are: (1) initiation - promotion of carcinogenesis as simulated by a single intubation of a carcinogen followed by lifetime exposure to sulfuric acid mist, and (2) co-carcinogenesis as simulated by multiple intubations of a carcinogen followed by lifetime exposure to sulfuric acid mist. The range-finding studies with sulfuric acid mist were completed. The combined intubation-inhalation chronic studies with benzo(a)pyrene and sulfuric mist have been initiated and are proceeding on schedule.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Dept. of Environmental Medicine, NYU		

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4 A

PROJECT OFFICER: David L. Coffin

RESPONSIBLE ORGANIZATION: Biomedical Research Branch, CSD, HERL RTP

FUNDS OBLIGATED	F.Y.
$213K	75
$52K	76
$165K	76A

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.: 2

STARTING DATE: 7/75

ESTIMATED COMPLETION DATE: 8/25/77

PLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

NOTICE OF RESEARCH PROJECT	PROJECT NO. (Do not use this space) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	CPA CKA

.E OF PROJECT

Development of Bio-Indicators of NO_2 and SO_2 Exposure

: NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER FESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

:es N. Bollinger, Ph.D., Princ. Invest., Associate Foundation Scientist (Biochemist)
:han D. Greene, Ph.D., Co-Investigator, Associate Foundation Scientist-(Immunologist)
ly M. Gause, M.S., Co-Investigator, Associate Foundation Scientist (Biochemist)
:herine J. Rowlands, B.S./M.T., Co-Investigator, Research Scientist (Endocrinologist)

E AND ADDRESS OF APPLICANT INSTITUTION

artment of Environmental Sciences, Southwest Foundation for Research and Education
). Box 28147 (8848 West Commerce Street), San Antonio, Texas 78284

MARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). n the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies sup- ng research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

As a result of the energy requirements in the United States, the oxides of sulfur
nitrogen will continue to constitute a potential health hazard, particularly in se-
ted portions of the population. Unlike many toxic or potentially toxic substances,
re does not exist at the present time a means of assessing the level of these two
lutants that an individual has accumulated. It is, therefore, the intention of this
earch effort to examine the biochemical action of NO_2 and SO_2 on both lung metabolism
metabolism in general and develop alterations that occur into a type of dose-re-
nse bio-indicator.

The first phase of this study will concentrate heavily on SO_2 and NO_2 produced alter-
ons in the chemistry and biochemistry of lipids and proteins. The second phase will
centrate on stress-induced and/or direct chemical insult-induced release of specific
-active compounds. Specific measurements will include oxide-induced changes in lung
serum; 1) lipids (peroxides, prostaglandins, lipolysis, etc.); 2) proteins (SO_2
NO_2 interactions producing electrophoretically detectable changes); 3) immune re-
nses (SO_2/NO_2 induced specificity); and 4) stress hormones (histamine, serotonin,
echolomines, bradykinins, ACTH).

Starting with acute and chronic exposures, a specific detectable change or a series
detectable changes will be investigated in regard to its or their usefulness, over
ying periods of exposure time and bracketing 0.14 ppm SO_2 and 0.13 ppm NO_2, as
od/urine bio-indicator tests.

TIFY PROFESSIONAL SCHOOL INVOLVED (Medical, l, etc.) earch Foundation	SIGNATURE OF PRINCIPAL INVESTIGATOR J. M. Bollinger	DATE March 10, 1976

FOR OFFICE USE ONLY

UPPORT METHOD (Check one) AGENCY STAFF (Intramural) NEGOTIATED CONTRACT RESEARCH GRANT	TASK NO. 4A	PROJECT OFFICER RESPONSIBLE ORGANIZATION HERL, RTP		
S OBLIGATED 83,576	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1	STARTING DATE 02/27/76	ESTIMATED COMPLETION DATE 2/26/79

orm 5769-1 (7-72) REPLACES PHS FORM 166 AND SSIE 75A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Procurement and Characterization of Refined Particles

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Earl O. Knutson, Ph.D.
Research Scientist, Fine Particle Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Illinois Institute of Technology Research
10 West 35th Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this contract is to obtain a variety of pure particulate substances, whose size distribution is reliably and carefully characterized, and when necessary reduced, for use in a variety of biologic experiments. The experimental protocols will employ particulate suspensions for intratracheal instillations in small animals, for inhalation exposures of animals to aerosols of these substances and administration of particles to in vitro cell culture systems. In addition, a limited number of different preparations of selected, finely particulate metal compounds in combination with the polycyclic hydrocarbon carcinogen benzo(a) pyrene are required for intratracheal administrations. These various preparations will be used by several different investigators supported by EPA contracts, as well as by in-house investigators at ERC-RTP

This contract is designed to provide a centralized, highly qualified, uniform source for particle preparation and characterization. This will help eliminate one potential cause of factitious variability between different investigations seeking to contrast biologic consequences of environmental toxicants. The specific compounds of interest: platinum metal or its oxides, palladium metal and its oxide, oxides of lead, nickel, cadmium, manganese, copper and zinc.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Private Research Institute		

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
4 B

PROJECT OFFICER
Choudari Kommineni, D.V.M., Ph.D.

RESPONSIBLE ORGANIZATION
Biomedical Research Branch, CSD, HERL RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$70K	76	0	7/75	6/77

EPA Form 5760-1 (7-72) REPLACES EPA FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

TITLE OF PROJECT Identification and Measurement of High Molecular Weight Organic in Emissions from Power Plants and Oil Refineries

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Physical Chemistry Division, Principal Investigator, Edward B. Dismukes, Head, Physical Chemistry Section; Herbert C. Miller, Research Chemist; Walter R. Dickson, Research Chemist; Ruby H. James, Research Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Southern Research Institute, 2000 Ninth Avenue South, Birmingham, Alabama 35205

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are to develop methods and procedures to identify and measure the organic compounds emitted to the atmosphere from energy-related sources and to determine by means of bioassays what fractions or classes of the organic emissions are of potential toxicological significance. The experimental work involves the development of sampling methods for the quantitative collection of organic emissions from coal-burning power plants and oil refineries; the use of separation techniques for classifying types of organic compounds and isolating individual compounds; identification of individual compounds by gas chromatographic, mass spectrometric, and other methods; and the screening of isolated fractions for toxicity by tissue-culture methods.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR William Barrett

DATE 12/23/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4C

PROJECT OFFICER David L. Coffin, D.V.M.

RESPONSIBLE ORGANIZATION HERL, Clinical Studies Division, RTP

FUNDS OBLIGATED

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1

STARTING DATE 11/75

ESTIMATED COMPLETION DATE 9/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

TITLE OF PROJECT
In Vitro Screening of Selected Air Pollutants for Potential Carcinogenicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Michael D. Waters, Research Chemist, BRB, CSD, HERL
Dr. Leonard Schrechtman, Microbiological Associates

NAME AND ADDRESS OF APPLICANT INSTITUTION
Microbiological Associates, Inc.
Bethesda, Maryland

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to provide the capability for in vitro screening of selected environmental pollutants for potential carcinogenicity. The contractor shall employ the established BALB/c 3T3 and 10T 1/2 bioassay systems for determining morphologic cellular transformation. The objectives of the bioassay procedure shall be to obtain for each test substance: (1) a concentration-response curve for cellular toxicity; (2) a concentration-response curve for morphologic transformation rate; (3) an estimation of transformation rate relative to positive controls; (4) confirmation that morphologically transformed cells are malignant by injection into syngeneic host animals. Appropriate solvent systems shall be investigated for the introduction of samples having limited solubility in the bioassay systems. Metabolic activation systems shall be implemented for employment with the BALB/c 3T3 cells initially and eventually also with the 10T 1/2 cells.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4C

PROJECT OFFICER Michael D. Waters
Dr. Michael D. Waters

RESPONSIBLE ORGANIZATION
Environmental Protection Agency, HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K	75		11/75	11/10/77
$60K	76			
$78.6	76A			

REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

TITLE OF PROJECT In Vitro Screening of Selected Air Pollutants for Potential Carcinogenicity Using Microbial Systems (Phase 4)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Michael D. Waters, Research Chemist, BRB, CSD, HERL

NAME AND ADDRESS OF APPLICANT INSTITUTION

To be awarded (negotiations in progress)

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Recent work in microbial genetics suggests that the histidine deficient strains of Salmonella typhimurium provided with liver microsomal preparations possess the requisite characteristics to permit rapid detection of many classes of presumptive carcinogens. To date, more than three hundred pure compounds have been evaluated in the Salmonella system. This is by far the largest number of compounds evaluated in any carcinogen screening system. However, the system has seen very limited application to crude mixtures representing selected air pollutants.

The purpose of this contract is to apply the Salmonella typhimurium histidine-deficient strains to the screening of selected air pollutants for potential carcinogenicity, both as complex mixtures (particulate and vapor) and as components. The application of the microbial tester strains will be carried out in conjunction with appropriate analytical chemical fractionation techniques which will separate, by means of solvents compatible with the bioassays, those materials likely to represent presumptive carcinogens and mutagens based on their chemical properties. Ancillary objectives will be to identify matrices which reduce biological availability and to identify and eliminate those components which are likely to mask mutagenic responses because of their relative toxicity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Michael D. Waters Dr. Michael B. Waters
	AGENCY STAFF (Intramural)	4C	RESPONSIBLE ORGANIZATION
X	NEGOTIATED CONTRACT		Environmental Protection Agency: HERL, RTP
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$110K	76A	1	11/75	10/77
$30K	76			

REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0061*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CKA

TITLE OF PROJECT Determination of the Influence of Mineral Cofactors in Conjunction with Carcinogens from Energy Related Materials

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Northrop Services

NAME AND ADDRESS OF APPLICANT INSTITUTION

Huntsville, Alabama

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Determination of the influence of environmental materials such as fibrous amphiboles, fine particles and the like as cofactors with carcinogenesis influences from alternate energy sources such as coal gasification and liquefaction, shale oil products and effluents. The methods employed would be intratracheal instillation and intrapleural innoculation. The endpoints would be formation of cancer in the lung or pleura or development of precancerous lesions compared to appropriate controls.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	(	Dr. David L. Coffin
X	NEGOTIATED CONTRACT	4D	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		CSD, HERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$300K	75		12/75	8/78
$470K	76			

EPA Form 5760-1 (7-73) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

TITLE OF PROJECT Compare Effects of Respirable Particles, Gases and Mists Using Small Airway Resistance in Donkeys as the Model for Pulmonary Irrritation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Donald E. Gardner, Chief, BRB, CSD, HERL
Dr. Morton Lippman, Professor, Environmental Medicine, NYU

NAME AND ADDRESS OF APPLICANT INSTITUTION

New York University
Institute of Environmental Medicine
Sterling Forest, New York

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The investigations of the effects of $(NH_4)_2SO_4$ and H_2SO_4 aerosols on pulmonary function, regional deposition, and bronchial clearance will be continued in order to clearly establish the nature of the effects produced and their dose-response relationships. This will provide a sound basis for subsequent tests with the same aerosols on human volunteers.

Airway resistance, dynamic compliance, and regional particle deposition were selected as sensitive indicators of physiological response. They will indicate transient effects attributable to the inhalation of airborne irritants at levels which produce no pathological effects. Effects on these physiological functions in donkeys should be essentially similar to those produced by the same irritants in humans. A major purpose is therefore to clarify the dose-response relationship for pulmonary irritation resulting from transient elevations in the ambient pollution aerosol concentration.

The intrabronchial deposition patterns of $(NH_4)_2SO_4$ and H_2SO_4 aerosols will also be measured in hollow bronchial casts of donkeys and human airways. The rate of water vapor concentration on aerosol growth and subsequent deposition in hollow casts will be tested in order to evaluate mathematical predictions of droplet growth from physico-chemical factors.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4E

PROJECT OFFICER Dr. Donald E. Gardner

RESPONSIBLE ORGANIZATION Environmental Protection Agency HERL-RTP

FUNDS OBLIGATED	F.Y.
$70K	74
$70K	75
$270K	76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 6-20-76

ESTIMATED COMPLETION DATE 6/78

CES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

INTERIM

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development and application of automated screening methodology for evaluating modification by candidate pollutants of patterned behavior in primates.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dr. William Buck
Iowa State University
125 Beardshear Hall
Ames, Iowa 50010

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data.) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Coal utilization and conversion products contain many compounds which affect the central nervous system (i.e., organometallics, hydrocarbons, etc.). The neurobiological effects of these compounds in primates will provide valuable data for regulatory decision making. This task calls for the development of testing procedures to study the effects of coal products on spontaneous behavior and to develop computer programs to define the various motor items comprising this spontaneous activity. Specifically, the testing system will be automated to provide computer identification and analysis of the monkey's patterned behavior utilizing pattern recognition techniques. Since the animal's behavioral output is a composite of nervous system activity, careful analysis of this behavior should provide a measure of subtle changes on nervous system function brought about by exposure to coal products. Once developed, the testing system will be evaluated as to its efficiency in detecting changes in behavior by the administration of pharmacological agents.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4 F

PROJECT OFFICER Lawrence W. Reiter

RESPONSIBLE ORGANIZATION D, OHEE, HERL, Research Triangle Park, NC

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$285.5K	75	2	1/75	7/29/78
$ 33.0K	76A			

EPA Form 5760-1 (7-73) REPLACES PHS FORM 166 AND SI-SIE 784 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

TITLE OF PROJECT Evaluate the Influence of Inhalation of Acid Aerosols, H_2SO_4, SO_2, HNO_3 and Particles on Production of Chronic Lung Disease in Rats, Guinea Pigs & Primate

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Donald E. Gardner, Chief, BRB, CSD, HERL
Dr. Walter Tyler, Director, Primate Center

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of California, Primate Center
School of Veterinary Medicine
Davis, California

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The effects of acid sulfur oxide aerosols will be studied in rats, guinea pigs, and nonhuman primates. Major variables which will be considered include (1) biology of the respiratory system of the experimental animal when compared to that of man, (2) concentration of the acid mist, (3) size of the particles in the acid mist, (4) duration of exposure. Interrelationships of the latter three factors will be considered in experimental design. Initial studies will utilize specific pathogen-free rats, while later studies will utilize nonhuman primates. Concentrations in initial studies will be higher than ambient in order to permit location of effects in the respiratory system resulting from carefully controlled particle size droplets. Stable, reproducible, monodisperse sulfuric acid aerosols in sizes ranging from 0.3 to 5 μm are needed to study the site and particle size response in animal inhalation studies.

Results will be evaluated using physiological, morphological, and biochemical techniques. Clearance of airways will be evaluated using tantalum bronchography and inhalation of radiolabelled particles followed with an Anger camera. Morphologica evaluation will include use of light, transmission electron, and scanning electron microscopy, histochemistry, and autoradiography. Biochemical techniques will be used to study the rate and pattern of synthesis of glycoproteins.

Macaque monkeys will be employed for the purpose of validating the data from rats in a species phylogenetically and anatomically closer to man and to approach the problem of pulmonary physiological studies on a larger species using more refined methods.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Veterinary
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4F

PROJECT OFFICER Dr. Donald E. Gardner

RESPONSIBLE ORGANIZATION IERL Ci
Environmental Protection Agency HERL RTP

FUNDS OBLIGATED	F.Y.
$100K	74
$100K	75
$120K	76
$120K	76A

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
STARTING DATE 7-1-76
ESTIMATED COMPLETIO DATE 6/77

ACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

TITLE OF PROJECT Evaluate Effects of Chronic or Intermittent Exposure to Respirable Particles and Mists Using Mouse Pulmonary Infectivity Model

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Donald E. Gardner, Chief, BRB, CSD, HERL
Dr. Richard Ehrlich, IIT Research Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION

IIT Research Institute, Life Science Research Division
10 West 35th Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This contract will examine the effect of acute, chronic and intermittent exposure to respirable particles (carbon) and acid mists (H_2SO_4) on the resistance of mice to pulmonary infections. Exposures will be for 6 hr/day. At various times during these exposures, animal will be removed and challenged with an infectious microorganism.

A no-effect level will be determined. The parameters to be measured will include: mortality rates; mean survival time, wet-dry weight ratio of lung tissue, and pathology. Other measurements of host defense alterations will include humoral and cell-mediated immunity response, phagocytic and bactericidal activity of lung defense cells.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4G

PROJECT OFFICER Dr. Donald E. Gardner

RESPONSIBLE ORGANIZATION Environmental Protection Agency, HERL, RTP

FUNDS OBLIGATED	F.Y.
$70K	74
$70K	75
$90K	76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 8/75

ESTIMATED COMPLETION DATE 6/2/77

S PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

TITLE OF PROJECT
Scanning Electron Microscopic Examination of the Effects of Air Pollutants on Pulmonary Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. Donald E. Gardner, Chief, BRB,CSD,HERL
Dr. Michael D. Waters, Research Chemist, BRB,CSD,HERL
Ms. Catherine Aranyi, Research Biochemist, IIT Research Institute
Dr. James Fenters, Scientific Advisor, IIT Research Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION
IIT Research Institute, Life Sciences Research Division
10 West 35th St.
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to correlate the in vitro toxicity of selected metal oxides with such physical characteristics of the particles as surface area, size, shape, and density. The investigation is directed toward resolving whether the toxicity of a test compound is affected by (a) adsorption to carrier particles having large surface areas and (b) the shape and size of the carrier particle.

Rabbit alveolar macrophages (AM) will be exposed in vitro to those particle concentrations (of PbO-, Mno$_2$-, NiO-, and CdO- coated and uncoated fly ash) established in the experiments concluded to date which produce a decrease in viability to 50% after 21 hours of incubation at 37°C and follow the time course of the changes in viability and enzyme release. In addition, SEM examination of AM with engulfed particles at various periods during incubation will be performed. The purpose is to map elemental distribution within the image, so that one can locate the test element in the cell and determine whether and to what extent it is still confined to the surface of the particle, or if it has been solubilized by the cellular enzymes and where it is located within the cellular structure.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4G

PROJECT OFFICER
Dr. Donald E. Gardner/Dr. Michael Waters

RESPONSIBLE ORGANIZATION
Environmental Protection Agency, HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20	76	0	4/18/76	9/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

TITLE OF PROJECT Effect of Pollutants from Coal Burning and Coal Gassification on the Immune System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Judith A. Graham, Microbiologist, BRB, CSD, HERL
Dr. Arian Zarkower, Associate Professor, Pennsylvania State University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Pennsylvania State University
102 Animal Industries Building
University Park, Pennsylvania 16802

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The influence of effluents from alternate energy production on the immune system will be investigated. Mice will be exposed to the pollutant for various time periods. The animals will then be examined for alterations in the immune system (particularly the respiratory immune system). Cell mediated immunity will be tested using the following assays: mixed lymphocyte cultures, functioning of effect on (killer) cells, and mitogen induced transformation. Humoral immunity will be tested using mitogen induced transformation, antibody production by lymphocytes and antibody titers. To correlate functional changes in the immune system with morphologic changes, histologic techniques will also be utilized. Studies will also be included to identify the quantity and locality of any environmental particulates used in this investigation. The project will also define dose-response relationships using the most sensitive parameters.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Veterinary
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4G

PROJECT OFFICER Judith A. Graham
RESPONSIBLE ORGANIZATION Environmental Protection Agency, HERL, RPT

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$35K	75		10-1-76	9/30/76
$45K	76			

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Cytotoxicity Evaluation of Selected Sulfates and of Source and Ambient Air Samples

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Joellen L. Huisingh, Research Chemist, BRB, CSD, HERL
Mr. James A. Campbell, Northrop Services, Inc.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Northrop Services, Inc.
P. O. Box 1484
Huntsville, Alabama 35807

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data. In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to determine the relative cellular toxicity of selected compounds including inorganic metallic chlorides, sulfates, sulfites and other pure chemicals and crude samples obtained from stationary sources and ambient air.

Animal and human cells of pulmonary origin (i.e. rabbit alveolar macrophage and Strain WI-38 human lung fibroblasts) will be cultured in vitro and exposed to the agents listed above. Cellular integrity and function will be monitored by measurement of viability, cell numbers, phagocytic activity, ATP and where applicable synthesis of DNA, RNA and protein.

Immediate objectives of this program are to:

1. Determine comparative toxicity of metallic sulfates and chlorides. Initial studies with rabbit alveolar macrophages indicate the toxicity is similar for the sulfates and corresponding chlorides of Zn, Mn, Ni, Cu, Cd, Hg and V.
2. Assess the significance of trace metal interactions in evaluating the toxicity of crude environmental samples. Initially interactions which affect toxicity have been observed between V and Cu, Cd and Se, Hg and Se.
3. Assess the effect of the bisulfite ion (including ammonium bisulfite) on the toxicity of trace metals.
4. Assess the toxicity of source and ambient air samples.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4G

PROJECT OFFICER Dr. Joellen L. Huisingh

RESPONSIBLE ORGANIZATION Environmental Protection Agency, HERL, RTP

FUNDS OBLIGATED	F.Y.
$45K	74
$40K	75
$100K	76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. Continuing

STARTING DATE

ESTIMATED COMPLETION DATE 9/76

PLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Establishment of a chemical repository for alternate energy source material for toxicity testing.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Robert Wood

EPA Contact: Dr. David Coffin
(919) 549-8411, ext. 2266

NAME AND ADDRESS OF APPLICANT INSTITUTION

ERDA
Oak Ridge, Tennessee

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (300 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To provide a repository where materials from new energy sources can be received, identified, divided into replicate specimens for testing, and forwarding to participating laboratory for testing with sufficient material being held under appropriate methods of storage for future reference.

Materials to be handled will include products and combustion effluents from coal gasification, and liquefaction shale oil extraction

This effort will be combined with a similar effort being undertaken by the NCI.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

Interagency Agreement

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
(4 H

PROJECT OFFICER
David L. Coffin, D.V.M.

RESPONSIBLE ORGANIZATION
HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$295K	76	2	10/75	9/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CKA

TITLE OF PROJECT Effect of alternate energy source material on whole animal carcinogenesis by percutaneous application of extracts and fractions to mice

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Robert Wood

NAME AND ADDRESS OF APPLICANT INSTITUTION

ERDA
Oak Ridge, Tennessee

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project constitutes the lead laboratory for carcinogenesis for the EPA studies of the toxic effects of products and effluents from alternate energy sources.

Materials for study will be derived through the chemical repository. Materials received will be subjected to preliminary toxicity testing and fractionation followed by cancer screening by standard methods, including skin painting and injection.

Data from this contract will be used to evaluate data from other methods such as bacterial mutagenesis, neoplastic transformation, intratracheal instillation, etc., in order to arrive at a coherent view of the relative value of various methods in dealing with practicable evaluation of carcinogenesis potential of crude materials or portions.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

Interagency Agreement

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	4 I	David L. Coffin, D.V.M.
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		OD, HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K $190K	75 76A	1	9/[illegible]	9/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

TITLE OF PROJECT Development of Methods for Determination of Potential Carcinogenicity in Neoplastic Transformation System Employing Crude Material from Alternate Energy Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: To be named.

NAME AND ADDRESS OF APPLICANT INSTITUTION

(To be awarded - negotiations in progress.)

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This effort constitutes Phase 3 of the contract, "In Vitro Screening of Selected Air Pollutants for Potential Carcinogenicity." The objective of this contract is to experimentally assess the validity of current methods for introducing crude samples (as derived from alternate energy sources such as coal gasification and liquefaction) into neoplastic cellular transformation systems. The contractor will examine the solubility of such crude samples or fractions thereof in the conventional solvents such as acetone, benzene or dimethylsulfoxide and in new solvents to be selected by the contractor. The contractor will study the influence of the solvent systems employed on the morphological and tumorigenic transformation using the test systems developed in Phases 1 and 2.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
-- 4J

PROJECT OFFICER
Michael D. Waters, Ph.D.

RESPONSIBLE ORGANIZATION
HERL, CSD, Biomedical Research Branch, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60K	76	0	11/75	10/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 2-A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Determination of Toxicity from Coal Gasification Products Using Cellular Model System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Arlon Zarkower, Associate Professor of Veterinary Science, Dept. of Veterniary Science, College of Agriculture

NAME AND ADDRESS OF APPLICANT INSTITUTION

Pennsylvania State University, 115 Animal Industries, University Park, Pennsylvania 16802

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is the potential that the present energy crisis may lead to a rapid proliferation of industrial plants which will convert coal into gas. It is therefore possible that one or more of the various coal gasification procedures may lead to the release of a highly toxic gas, arsine. The purpose of this contract is to evaluate the potential environmental hazard of this substance. In general, the specific aims are to: 1) determine the mechanism of arsine-induced damage to human red blood cells in vitro, and 2) to ascertain whether arsine interferes with DNA repair processes in ultraviolet-irradiated E. coli and in mammalia tissue culture cell lines The approaches chosen for this study are based on two assumptio s: that it is necessary to know the acute mechanism of toxicity of this agent in order to understand its implication to human health, and that the possible relation of arsine to carcinogenesis requires at least preliminary assessment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 4K

PROJECT OFFICER Dr. Gardner

RESPONSIBLE ORGANIZATION HERL, CSD, Biomedical Research Branch

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$45K	76	1	9/75	9/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CKA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Cellular Model System to Determine Cytotoxicity from Alternate Energy Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Michael D. Waters, Research Chemist, BRB, CSD, HERL
Dr. William E. Bowers, Rockefeller University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockefeller University
New York, New York

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor shall conduct a series of cytological and biochemical experiments designed to define the nature of lymphocyte cytotoxic activity. Specifically, the contractor shall identify those bioenergetic and biosynthetic pathways believed to be important in the process and shall determine the nature and localization of any substances elaborated by the lymphocytes which are found to be involved in foreign cell destruction. He shall determine the limitations of the in vitro response using allogeneic tissues, with special concern for potential application of the test system to the problem of detecting neoplastically transformed cells. Emphasis shall be on development of a quantitative bioassay system in all basic research efforts of Phase 1.

This research effort shall be subject to continuation for two additional phases if work progresses satisfactorily.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4 L

PROJECT OFFICER Michael D Waters
Dr. Michael D. Waters

RESPONSIBLE ORGANIZATION
Environmental Protection Agency HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50K $125K	75 76	1	11/75	8/9/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CKA

TITLE OF PROJECT Determination of the Effects of Material From Alternate Energy Sources on Upper Respiratory Tract Clearance Mechanisms.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Donald E. Gardner, Chief, BRB, CSD, HERL
Dr. Dorothy Adalis, Associate Professor of Biology, Ball State University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ball State University
Department of Biology
Muncie, Indiana 47306

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this contract is to screen a variety of substances for their toxic effect on mucociliary activity using an in vitro model system.

Since cilia play a significant role in pulmonary clearance, proper functioning is essential for defense against various environmental insults. However, ozone, nitrogen dioxide, nickel and cadmium have an adverse effect on this system. Therefore, it becomes increasingly important to determine if alternate energy sources such as shale oil and coal gassification and liquefaction, or particulate effluents from power stations, stationary engines or mobile sources produce pollutants toxic to the mucociliary escalator.

Due to the above considerations isolated hamster tracheal rings will be exposed to pollutants in vitro. Parameters to be measured are:

(1) effect on ciliary beat frequency,
(2) effect on the energy source (ATP) of beating,
(3) effect on ciliary and tracheal morphology, and
(4) recovery of the tracheal rings after exposure.

In all cases, parameters will be tested for dose-response effects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4M

PROJECT OFFICER Dr. Donald E. Gardner

RESPONSIBLE ORGANIZATION Environmental Protection Agency HERL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$30K	75	2	10-75	5/79
$40K	76			

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
CKA

TITLE OF PROJECT Assessment of the Postnatal Development and Function of the Central Nervous System of Monkeys Exposed to Tritiated Water from Conception to Birth or Weaning

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. L.S. Otis, Director Psychobiology & Physiology (Project Supervisor); D.C.L.Jones, Program Manager Environmental Physiology (Principal Investigator); C. Mitoma, Director Biomedical Research; R.A. Barth, Director Food & Biosciences Dept.; S.J. Jackson, Director, Animal Care Services; D.P. Sasmore, Manager Pathology Program; J.S. Krebs, Senior Biophysicist; J.N. Kaplan, Program Manager (over)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, Calif 94025

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this study is to obtain dose-response relationships for the effects of chronic exposure to tritiated water (HTO) on the development and function of the central nervous system in nonhuman primates. Pregnant female squirrel monkeys (Saimuri ciureus) will receive HTO in the drinking water in concentrations sufficient to produce body burdens ranging from 0.5 to 4.0 μCi HTO/ml of body water. Administration of HTO will continue throughout pregnancy and to either birth or weaning. Postnatal growth and development of offspring will be evaluated using a variety of biochemical and behavioral indicators of neural function. Neurochemical analysis of brain tumors and gross and microscopic evaluation of all tissues will be done at one year of age.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR
David C. Jones

DATE
3/16/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
5C

PROJECT OFFICER

RESPONSIBLE ORGANIZATION
HERL, RTP

FUNDS OBLIGATED

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE
12/1/75

ESTIMATED COMPLETION DATE 7/31/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CQC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Carcinogenic Photooxidation Product from Petroleum PAH's at Air-Sea Interface

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. J.L. Laseter, Professor and Chairman, Department of Biological Sciences AND
Dr. G.W. Griffin, Professor, Department of Chemistry
University of New Orleans
New Orleans, Louisiana 70122 (504) 288-3161

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of New Orleans
New Orleans, Louisiana 70122

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary purpose of the proposed program will be to determine the major photooxidation products of petroleum derived polynuclear aromatic hydrocarbons (PAH). These studies will be designed to partially elucidate "weathering" phenomenon of petroleum at an air-water interface of marine environments. Particular attention will be given to the photooxidation pruducts which may have mutagenic or other biological properties. A portion of the program will involve chromatographic resolution and mass spectrometric characterization of aromatic hydrocarbon and their biologically significant oxidation products in previously collected field samples collected at the air-sea interface.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE 9-7-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER Dr. Norman L. Richards

RESPONSIBLE ORGANIZATION Gulf Breeze, Florida

FUNDS OBLIGATED
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
STARTING DATE 8/26/76
ESTIMATED COMPLETION DATE 8/25/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Air, Water, and Multi-Route Exposures and their Effects: Pollutants Associated with Energy Development.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Norman Richards, Dr. W. Peter Schoor, Dr. Nelson Cooley, Dr. Gerald Walsh, Mr. Lowell Bahner.

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Environmental Protection Agency
Environmental Research Laboratory
Sabine Island, Gulf Breeze, Florida 32561

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Constituents of and compounds rerived from petroleum hydrocarbons may accumulate in portions of the marine food chain consumed by man. The objective of this research is to provide an assessment of the potential for accumulation of specific carcinogens found in fractions of shale oil.

[redacted]

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	**SIGNATURE OF PRINCIPAL INVESTIGATOR** Norman L Richards	**DATE** Sept. 30, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		**TASK NO.**	**PROJECT OFFICER**
X	AGENCY STAFF *(Intramural)*	1	Dr. Norman L. Richards
	NEGOTIATED CONTRACT		**RESPONSIBLE ORGANIZATION**
	RESEARCH GRANT		Gulf Breeze, Florida

FUNDS OBLIGATED	**F.Y.**	**NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.**	**STARTING DATE**	**ESTIMATED COMPLETION DATE**
			10/77	10/78

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CLA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Effect of Environmental Pollutants in Relation to Age & Dietary Influence
I. Toxic Trace Elements

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Krista Kostial, Head, Dept, of Mineral Metabolism, Institute for Medical Research and Occupational Health, 158 M. Pijade, 41000 Zagreb, Yugoslavia

J.F. Stara, Project Officer, U.S. EPA

NAME AND ADDRESS OF APPLICANT INSTITUTION

Institute for Medical Research & Occupational Health
157 M. Pijade, 41000 Zagreb, Yugoslavia

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This work is intended to evaluate various factors influencing the effect of environmental pollutants with particular emphasis on trace elements.

Special attention will be paid to differences in absorption, distribution and retention in relation to age, to the estimation of critical organ in the immature, to differences in toxicity due to age, to late effects caused by infant exposure and to nutritional factors and deficiencies as influencing trace element metabolism and effects.

Most of the experimental work is going to be performed on rats using radioactive isotopes of trace elements for studying various metabolic parameters (i.e. ^{115}Cd, ^{203}Hg, ^{203}Pb, ^{59}Mn etc.). Stable trace elements are going to be used as additives to different diets to evaluate the effect of chronic exposure and interaction of essential and toxic trace elements. The experiments on humans are envisaged for a later stage.

These investigations are expected to provide a better basis for evaluating the effects of environmental pollutants in the young.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER J.F. Stara

RESPONSIBLE ORGANIZATION EPA-ORD-HERL

FUNDS OBLIGATED $85, 000

F.Y. 76&77

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. [illegible]

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA
CLA

TITLE OF PROJECT CHEMICAL CHARACTERIZATION AND TOXICITY OF METAL BINDING COMPONENTS OF EMISSIONS FROM MOBILE AND STATIONARY ENERGY SOURCES

NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. V.N. Finelli, Ph.D., Assoc. Professor, Principal Investigator; L.W. Michael, Ph.D., Assoc. Prof., Co-Investigator, H.G. Petering, Ph.D., Professor, V.J. Elia, Ass't. Prof., T.E. Cody, Ph.D. Ass't. Prof., and R. Christian, Ph.D., Assoc. Prof. - Department of Environmental Health.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Cincinnati, Cincinnati, Ohio 45267

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research is based on the hypothesis that some of the adverse health effects linked by epidemiological studies to air pollution, of which the exhaust emissions from automobile and stationary power sources are major parts, may be due to the impairment of essential trace metal metabolism by ubiquitous metal-binding chemicals, toxic metals and their chelates. The objectives of this research are a) to characterize the metals and metal-binding components of mobile and stationary exhaust emissions b) to assess their toxicological effects on metal-dependent biological functions and c) to compare and contrast selected biological parameters in animals subjected to total exhaust emissions and to individual components of those emissions, in particular sulfuric acid, sulfates and carbon monoxide. We have established that catalyzed auto emissions are less toxic than non-catalyzed emissions, both in whole exposed animals and in cell cultures; certain biological effects were due to CO concentration in the exposure chambers, but others, such as impaired growth and organ damage, had to be attributed to components of emissions yet to be identified. We have established the presence in automobile and stack emissions of metal-binding agents and their inhibitory effect on metalloenzymes. We have observed protective role of nutritional zinc, a micronutrient, on the toxicological effects of lead. Inhalation studies showed that H_2SO_4 was less toxic than $Al_2(SO_4)_3$, thus indicating that the toxicity resides in the metal ion rather than in $SO_4^=$. Comparative studies on the chemical characteristics and toxicity of stack emissions from power plants fired with coal from eastern and western regions are in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.)
College of Medicine

SIGNATURE OF PRINCIPAL INVESTIGATOR
Vincent N. Finelli

DATE
10/5/76

FOR OFFICE USE ONLY

SUPPORT METHOD [illegible]
1

PROJECT OFFICER
S. D. Lee, Ph.D.

RESPONSIBLE ORGANIZATION
HERL, EPA - Cinn.

[illegible]	F.Y.	[illegible]	STARTING DATE	ESTIMATED COMPLETION DATE
[illegible]	75		[illegible]	[illegible]

EPA Form [illegible] (7-72) [illegible]

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. [illegible]

PROJECT NO. (Do not use this space)
SSIE
EPA CLA

TITLE OF PROJECT Effect of Pollutants from Energy Consumption and Environment
Trace Metals on Lung Metabolism.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. G. Mustafa, Ph.D., Adjunct Assistant Professer
D. F. Tierney, M.D. Professor
A.D. Hacker, Dr.PH, Postgrad. Res. Biochemist
J.J. Ospital, Dr. PH, Postgrad. Res. Biochemist
N. Elsayed, M.S., Staff Res. Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION

Regents of the University of California, School of Medicine - UCLA
Los Angeles, California, 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to determine qualitative and quantitative biochemical changes in the lungs of animals exposed to pollutants related to energy consumption, viz., ozone, nitrogen oxides, sulfur oxides, sulfuric acid, sulfates and environmental trace metals. Animals (rats) are exposed to pollutants and the effects in the lung are delineated using sensitive biochemical parameters.

The findings of studies to date are summarized as follows. Although acute exposures to oxidant pollutants generally cause a depression of lung enzymatic activities, exposures to ozone at concentrations below 1 ppm (simulating ambient conditions in photochemical smog) and to nitrogen dioxide at 5 ppm (Threshold Limit Value) for a few days or longer result in a stimulation of lung metabolism. As judged from enzymatic activities, lung metabolism may exhibit an initial depression (within 24 hours) but a subsequent elevation which attains the peak between 3 and 4 days of exposure. For exposures involving 0.8 ppm ozone, a 50-100% elevation of metabolic parameters has been observed. For lower levels of ozone (viz., 0.5 and 0.2 ppm) the metabolic changes are small, exhibiting prolonged exposures to ozone (viz., 0.8 ppm) show that the biochemical changes in the lung remain elevated for as long as 50 days of exposure, but then decline almost to control level after 90 days of exposure. For lower levels of ozone, the changes are found to revert to control level within 20 days of exposure. If the exposure is discontinued after a few days, the biochemical changes in recovering animals return to control level within a week. It may be concluded that low-level oxidant exposures cause biochemical changes in the lung, and that the changes are reversible.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
School of Medicine

SIGNATURE OF PRINCIPAL INVESTIGATOR
Mohammad G. Mustafa, Ph.D.

DATE
August 9, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER [illegible] Ph.D.

RESPONSIBLE ORGANIZATION [illegible]

FUNDS ALLOCATED $237,355

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1

STARTING DATE 6-20-7[illegible]

ESTIMATED COMPLETION DATE [illegible]

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CLA

TITLE OF PROJECT: Biological Effects of Catalytic Emission Components and Effects of Energy Consumption Related Trace Metals on Pulmonary Macromolecular Metabolism

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Rajendra S. Bhatnagar, Ph.D.
Professor of Biochemistry in Residence
School of Dentistry--630 Sciences
University of California, San Francisco
San Francisco, California 94143

NAME AND ADDRESS OF APPLICANT INSTITUTION

School of Dentistry--630 Scineces
University of California, San Francisco
San Francisco, California 94143

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is mounting concern over the increase in atmospheric concentrations of a variety of metallic pollutants associated with energy consumption and changing energy sources. With a few exceptions, very little is known about the toxicity and long range health effects of many of these metals. We have previously developed a highly reproducible & controllable lung organ culture system for the evaluation of several environmental toxins; our studies provided useful information concerning the toxicity of these substances and also yielded information concerning the molecular mechanisms involved in these toxic interactions leading to pulmonary disorders. In our original contract with the EPA, we examined the toxicity of the metals Pt, Pd and Cd and initiated investigations on the effects of Hg on pulmonary tissues in organ culture. Because of the suitability and versatility of this procedure, we propose to use our lung organ culture system for investigating the biochemical effects of the energy consumption-related trace metals, Ru, Ni, Hg, Cu and Zn. In this proposal we propose to (1) Determine effects of these trace metals on pulmonary connective tissue biosynthesis using lung organ cultures; (2) Determine the dose response of these compounds; (3) Determine qualitative and quantitative changes in collagen induced by above pollutants. Similar studies will be initiated with elastin; (4) Correlate observed biochemical changes with morphological lesions; (5) Parameters of collagen synthesis will be examined in lungs of rats exposed to the above pollutants, at the EPA, Cincinnati. We will also investigate the effect of Cadmium on the synthesis of connective tissue macromolecules. Further additional studies in relation to the metallic pollutants will involve examination of the interactions of the toxins with critical enzymes involved in connective tissue macromolecular synthesis to determine their sites of action. Studies will also be carried out to determine the effect of the above pollutants on informational macromolecule synthesis in lung organ cultures. The effects of these trace metals on DNA and RNA synthesis will be investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
School of Dentistry		8/6/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER S. D. Lee

RESPONSIBLE ORGANIZATION HERL - EPA-[illegible]

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS OF SUPPORT LIKELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$33[illegible]	'76	2	6-7-'74	[illegible]

EPA Form [illegible] (7-72) REPLACES [illegible] WHICH MAY [illegible]

Reproduced from best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	Form Approved OMB No. 158-R0051 PROJECT NO. (Do not use this space) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CLA

TITLE OF PROJECT Air, Water and Multi-Route Exposure and Health Effects from Pollutants Associated with Energy Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jerry F. Stara, EPA Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

EPA - HERL
26 W. St. Clair Street
Cincinnati, Ohio 45268

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies have been designed to assess the health effects of exposures to substances which pollute air and water as a result of energy technologies. Emphasis is being placed on potentially toxic agents resulting from fuel extraction, conversion and combustion. The evaluation of the toxicty of the pollutants and their metabolic products include a spectrum of bioeffect indices. The present program includes:

(1) The assessment of exposure to toxic organic chemicals which are associated with energy processes and which reach man through water. The investigations include screening for potential carcinogens, mutagens, and teratogens in water supplies, as they result from energy sources emphasizing coal and shale oil processing.

(2) Toxicologic data are obtained for multi-route exposures from metal pollutants resulting from fossil fuel extraction, combustion and conservation. The establishment of additional physiological and biochemical indicators to establish a more sensitive dose: effect data base include studies of age sensitivity and influence of dietary composition on absorption, deposition and toxicity of the trace elements which pollute the environment from energy-related sources; long-term effects of inhalation exposures to toxic components of fly ash; biochemical effects of energy related trace metals on pulmonary macromolecular metabolism.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) HERL-Cincinnati	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 7/1/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) AGENCY STAFF (In-house) [illegible] CONTRACT RESEARCH GRANT	TASK NO. Task 001	PROJECT OFFICER J. F. Stara RESPONSIBLE ORGANIZATION EPA, ORD, HERL, CPO

FUNDS OBLIGATED 25.0	F.Y. 77	NO. OF FUTURE YEARS OF ANTICIPATED ACTIVITY ASSUMED BEYOND CURRENT F.Y. 2	STARTING DATE 10/1/76	ESTIMATED COMPLETION DATE 10/1/77

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CLA

TITLE OF PROJECT
Combined Testing Protocol for Detecting Environmental Mutagenic Agents

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Co-Principal Investigator: Ingeborg Nienhold, M.D., S.S. 039-42-5136, Instructor, Dept. of Preventive Medicine & Community Health, The University of Texas Medical Branch, Galveston, Texas.

Principal Investigator: Marvin S. Legator, Ph.D., S.S. 348-16-3682, Professor of Preventive Medicine & Community Health, University of Texas Medical Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Texas Medical Branch
Galveston, Texas 77550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It should now be possible to combine many of the available procedures to detect and characterize environmental mutagens into a single animal experiment. This proposal will attempt to develop a protocol for carrying out the following studies in a single animal test: (a) repair determination in germinal cells, (b) micronuclei test, (c) metaphase analysis of bone marrow (d) repair determination somatic cells, (e) spermatocyte test, (f) analysis for blood for active metabolites, (g) analysis of urine for active metabolites. The data generated from such a comprehensive screen allows the direct correlation of all the various tests in the same animal under the same conditions. This proposal will attempt to develop the optimum conditions for integrating seven discreet measurements for mutagenicity into a single test and illustrate the activity of standard mutagens and environmental agents in this approach.

Since the majority of known carcinogens are also mutagenic the use of these procedures should detect carcinogenic as well as mutagenic agents in a fraction of the time needed for conventional carcinogenicity tests.

[redacted]

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* University of Texas Medical Branch (Medical School)	**SIGNATURE OF PRINCIPAL INVESTIGATOR**	**DATE** 3/5/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☑ RESEARCH GRANT

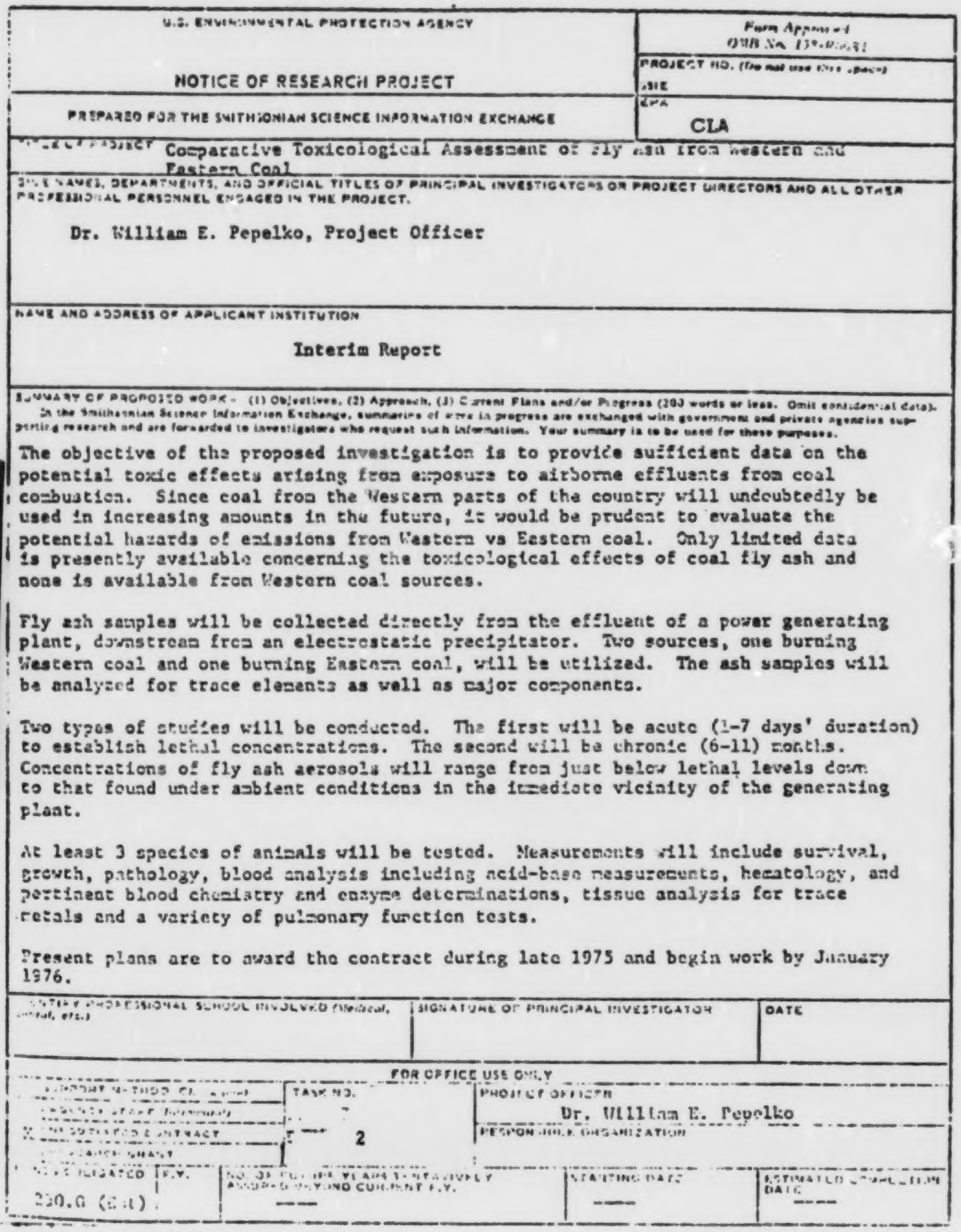
TASK NO. 1F -

PROJECT OFFICER J. F. Stara

RESPONSIBLE ORGANIZATION EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
92,093	76		8/16/76	8/15/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.



U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	Form Approved OMB No. 158-R0031
	PROJECT NO. (Do not use this space) SIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CLA

TITLE OF PROJECT: Comparative Toxicological Assessment of Fly Ash from Western and Eastern Coal

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. William E. Pepelko, Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

Interim Report

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the proposed investigation is to provide sufficient data on the potential toxic effects arising from exposure to airborne effluents from coal combustion. Since coal from the Western parts of the country will undoubtedly be used in increasing amounts in the future, it would be prudent to evaluate the potential hazards of emissions from Western vs Eastern coal. Only limited data is presently available concerning the toxicological effects of coal fly ash and none is available from Western coal sources.

Fly ash samples will be collected directly from the effluent of a power generating plant, downstream from an electrostatic precipitator. Two sources, one burning Western coal and one burning Eastern coal, will be utilized. The ash samples will be analyzed for trace elements as well as major components.

Two types of studies will be conducted. The first will be acute (1-7 days' duration) to establish lethal concentrations. The second will be chronic (6-11) months. Concentrations of fly ash aerosols will range from just below lethal levels down to that found under ambient conditions in the immediate vicinity of the generating plant.

At least 3 species of animals will be tested. Measurements will include survival, growth, pathology, blood analysis including acid-base measurements, hematology, and pertinent blood chemistry and enzyme determinations, tissue analysis for trace metals and a variety of pulmonary function tests.

Present plans are to award the contract during late 1975 and begin work by January 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (X one) FEDERAL STAFF (Intramural) X NEGOTIATED CONTRACT RESEARCH GRANT	TASK NO. 2	PROJECT OFFICER Dr. William E. Pepelko RESPONSIBLE ORGANIZATION

AMOUNT OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
230.0 (est)		——	——	——

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CLA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Investigation of Effects of Prolonged Inhalation of Nickel-Enriched Fly Ash in Syrian Golden Hamsters

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Alfred P. Wehner

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to investigate the toxicology of inhaled fly ash from coal combustion using a novel technique. Rather than vary the fly ash concentration alone, nickel will be added during coal combustion to produce a nickel-enriched fly. Separate groups of hamsters will be exposed to normal fly ash identically prepared from the same coal and to nickel-enriched fly ash.

The contract was awarded in Sept. 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO 2

PROJECT OFFICER W. [illegible]

RESPONSIBLE ORGANIZATION EPA-ORD-HERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
325.0	77	3	9/76	9/79

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA
CLA

TITLE OF PROJECT
Combined Testing Protocol for Detecting Environmental Mutagenic Agents

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Co-Principal Investigator: Ingeborg Nienhold, M.D., S.S. 039-42-5136,
Instructor, Dept. of Preventive Medicine & Community Health,
The University of Texas Medical Branch, Galveston, Texas.
Principal Investigator: Marvin S. Legator, Ph.D., S.S. 348-16-3632, Professor
of Preventive Medicine & Community Health, University of Texas Medical Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Texas Medical Branch
Galveston, Texas 77550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It should now be possible to combine many of the available procedures to detect and characterize environmental mutagens into a single animal experiment. This proposal will attempt to develop a protocol for carrying out the following studies in a single animal test: (a) repair determination in germinal cells, (b) micronuclei test, (c) metaphase analysis of bone marrow (d) repair determination somatic cells, (e) spermatocyte test, (f) analysis for blood for active metabolites, (g) analysis of urine for active metabolites. The data generated from such a comprehensive screen allows the direct correlation of all the various tests in the same animal under the same conditions. This proposal will attempt to develop the optimum conditions for integrating seven discreet measurements for mutagenicity into a single test and illustrate the activity of standard mutagens and environmental agents in this approach.

Since the majority of known carcinogens are also mutagenic the use of these procedures should detect carcinogenic as well as mutagenic agents in a fraction of the time needed for conventional carcinogenicity tests.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, [illegible]) University of Texas Medical Branch (Medical School)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 3/5/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) AGENCY STAFF (Intramural) NEGOTIATED CONTRACT [illegible] GRANT	TASK NO. 2	PROJECT OFFICER J. F. Stara RESPONSIBLE ORGANIZATION HERL-ORD-EPA		
FUNDS OBLIGATED [illegible]	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y. 1 year	STARTING DATE 8/16/76	ESTIMATED COMPLETION DATE 8/15/78

EPA Form [illegible] (1-72) REPLACES PHS FORM [illegible] AND SSIE 7A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL [illegible]TECTION AGENCY

Form Approved
OMB No. [illegible]

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CLA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT "Determination of Potential for Chronic Intoxication/Carcinogenesis, Mutagenesis, Teratogenesis, and Reproductive Potential of Five Compounds Generated From Coal Conversion and Utilization"

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. Ross Hart, Ph.D., Principal Investigator
Department of Pharmacology & Toxicology

Robert P. Beliles, Ph.D.
Department of Pharmacology & Toxicology

David J. Brusick, Ph.D.
Department of Genetics

Dale W. Matheson, Ph.D.
Department of Genetics

Allan G. Manus, D.V.M.
Department of Veterinary Medicine & Science

Herman R. Seibold, V.M.D.
Department of Pathology

Jerry F. Stara, Project Officer, EPA

NAME AND ADDRESS OF APPLICANT INSTITUTION

Litton Bionetics, Inc.
5516 Nicholson Lane.
Kensington, Maryland 20795

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data.) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Five compounds will be investigated for determination of their potential for chronic intoxication/carcinogenesis, mutagenesis, teratogenesis, and alteration of reproductive function. The first four compounds will be methyibenzimidazole, dibenzofuran, 1, 2, 4-trimethylbenzene and thallium sulfate. The fifth compound will be selected from a longer list of compounds of environmental concern. The protocol to be followed is an integrated one similiar to that published by the Minister of Health and Welfare, Canada, in the book entitled The Testing of Chemicals for Carcinogenesis, Mutagenesis and Teratogenicity, September 1973. It differs primarily in that it uses the heritable translocation test, rather than the dominant lethal test.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		10/21/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	002	J. F. Stara
[illegible] CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		EPA, ORD, HERL, CPO

FUNDS OBLIGATED [illegible]	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE

EPA Form 5700-1 (7-72) [illegible] THIS FORM [illegible] NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

CQC

TITLE OF PROJECT
Accumulation and Elimination of a Certain Aromatic Petroleum Hydrocarbon

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Robert Farragut - Environmental Investigation Chief
Harold Thompson - Research Chemist
Jane Corliss - Biologist

NAME AND ADDRESS OF APPLICANT INSTITUTION
NMFS
75 Virginia Beach Drive
Miami, Florida 33149

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study is designed to determine the accumulation and elimination of a certain carcinogenic aromatic petroleum hydrocarbon by selected marine test organisms of species that are used for human consumption.

The two organisms chosen for the study are shrimp and snapper. There will be three test tanks maintained for each species. One tank for each species will be used as a control, the second tank for each species will contain the hydrocarbon at the 1 ppb level, and the third tank for each species will contain the 5 ppb level. Study organisms will be sacrificed at intervals of 4, 7, 14, 21, and 35 days. There will be three different tissues analyzed for the study hydrocarbon from the shrimp. They are 1) the cephalothorax, 2) the gut, and 3) the tail. Four different tissues will be analyzed for the study hydrocarbon from the snappers. They are 1) the liver, 2) the gall bladder, 3) the gut, and 4) the flesh. Specimens of both species of study organisms will be drawn from the control tanks at intervals of 4, 14, and 35 days. Analysis of the control specimens will be done on the same types of tissues stated above. Control tank water will analyzed for background levels of the study hydrocarbon at 4, 14, and 35 day intervals. After 35 days exposure to both concentration levels of the study hydrocarbon, both the shrimp and snappers will be placed in tanks with uncontaminated seawater. Specimens of each species will be sacrificed for analysis at 4, 7, 14, 21, and 35 days. Analyses will be performed on the same types of tissues as before. Control specimens of each species will be sampled at 4, 14, and 35 days and analyses performed on the same types of tissues as given above. Control tank water will again be screened for background levels of the study hydrocarbon at the same sampling intervals as before.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Farragut	DATE Sept. 13, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. Norman L. Richards
☐	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION Gulf Breeze, Florida
☐	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76			

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CQC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Detection of Carcinogens in Sea Water; Use of Hybrid Fish and Food Chains

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Douglas Humm
Dept. of Zoology

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of North Carolina
Chapel Hill, N.C. 27514

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Select hybridized fish which are sensitive to carcinogens and develop a sensitive method for the detection of lesions. Apply this method to the detection of carcinogenic pollutants in the environment. Establish food chains to examine the transmission and metabolism of natural and synthetic carcinogens in their passage along the food chain.

(2) Hypersensitive pigment cell bearing hybrid fish will be bred and exposed to carcinogens. Observations will be made on the shape, histolytic transformation, and migration of affected cells. Food chain work will include radioactive PNA's, bacteria, and crustacean, and fish.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. Norman L. Richards
	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION ERL, Gulf Breeze Florida
	NEGOTIATED CONTRACT		
X	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$41,150	76		10/1/76	10/1/79

EPA Form [illegible] [illegible] WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Toxic, sublethal and latent effect of certain petroleum hydrocarbons and barium sulfate on marine organisms.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

K. Ranga Rao, Associate Professor, Dept. of Biology, University of West Florida

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of West Florida
Pensacola, Florida 32504

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This investigation will examine the toxic, sublethal and latent effects of certain polycyclic aromatic hydrocarbons and barium sulfate on larval and adult stages of selected invertebrates and fish. Experiments are designed to determine the effects of these compounds on (a) crustacean molt cycles, (b) regenerative limb growth, (c) respiration, (d) heart rate and (c) histology and ultrastructure of selected tissues. Studies are aimed to determine the uptake by marine organisms of these pollutants from water and bioaccumulation through aquatic food chains. By using a combination of autoradiographic and convential analytical techniques the sites and extent of accumulation of pollutants in marine organisms will be determined.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* University of W. Florida Department of Biology	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 2/10/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
AGENCY STAFF *(Intramural)*
NEGOTIATED CONTRACT
X RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER Dr. Norman L. Richards

RESPONSIBLE ORGANIZATION Gulf Breeze, Florida (904)932-5311

FUNDS OBLIGATED $94, 984	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 5/16/76	ESTIMATED COMPLETION DATE 5/16/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CQC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Effects of Petroleum Compounds on Estuarine Fishes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Billy J. Martin
Dr Harold D. Howse

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Southern Mississippi
Southern Station, Box 18
Hattiesburg, Mississippi 39401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to study chemically induced tumors in teleost fishes Both marine and freshwater species will be exposed to low levels of a known carcinogen for 300 days Fish developing tumors or other pathologies during this period will be sacrificed and tissue from the liver, kidney, intestine, and gills will be studied histologically. Tissues from all the fish with no grossly apparent pathologies at the time the experiment is terminated will be studied in the same manner in order to detect any neoplasias or preneoplastic conditions.

It is expected that this research will:

1) provide evidence concerning the quantities of benzopyrene necessary to induce neoplasias
2) supply additional data concerning tumors in teleosts
3) establish the feasability of using teleost fish as early indicators of carcinogenic substances in the aquatic environment, and
4) demonstrate that this type system could be used to screen compounds for carcinogenic properties with less difficulty and expense than the methods currently employed

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* University	SIGNATURE OF PRINCIPAL INVESTIGATOR Billy J Martin	DATE 2/4/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Dr. John A Couch

RESPONSIBLE ORGANIZATION
Gulf Breeze, Florida

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE 7/5/76	ESTIMATED COMPLETION DATE 10/4/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Quantitative Mutagenesis Testing in Mammalian Cellular Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Hatch, F.T., Principal Investigator, Biomedical Sciences Division
Carver, J.H., Lead Scientist
Branscomb, E.W.
Galas, D.J.

NAME AND ADDRESS OF APPLICANT INSTITUTION
Lawrence Livermore Laboratory
P.O. Box 808
Livermore, Ca. 94550
Phone: (415) 447-1100 x 3563

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (180 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives of this project are: (1) to develop and apply quantitative multiple-marker assays utilizing cultured mammalian cells for the evaluation of potential mutagenic effects of agents derived from energy technologies, and (2) to use these existing and newly-developed biological screening systems for the identification of mutagenic agents associated with coal and oil shale extraction, conversion, or utilization.

This program proposes the use of multiple drug-resistance markers for forward mutation in cultured Chinese hamster ovary (CHO) cells, as well as in vitro and host-mediated in vivo/in vitro procedures in the Syrian hamster embryo (SHE) system. The markers being developed measure the frequency of forward mutation at the recessive azaadenine-resistant marker, the X-linked azaguanine-resistant phenotype, and the dominant ouabain-resistant locus. Established procaryote and lower eucaryote systems will be used for comparison and reference; the most satisfactory markers in all systems will then be combined into a standard protocol in which each of the gene loci can be measured for mutation following exposure to a particular test agent or combination thereof.

Progress to date has been: (1) Selection and validation of three CHO cell lines heterozygous at the adenine phosphoribosyltransferase locus. These stock lines have been tested for optimal cell plating, selecting drug concentration, and expression time; the cell lines are now being used in triple marker mutagenesis experiments. (2) The SHE system has been tested extensively-plating efficiency optimized, ouabain resistance determined, with work currently in progress to optimize the azaguanine-resistance marker. Both CHO and SHE systems have been tested with the standard mutagen EMS, and experiments utilizing specific hydrocarbons relevant to energy technology are now underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Frederick T. Hatch	10/26/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF (Intramural)	#1	Dr. George E. Stapleton
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		AAES/ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K	1976	Three	June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

CPA

EPA-IAG-D6-E681-BAN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Morphological Variants in Damaged Sperm

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Wyrobek, A.J., Principal Investigator, Biomedical & Environmental Research Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P.O. Box 808
Livermore, Ca. 94550

Phone: (415) 447-1100 ext. 3559

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Ionizing radiation as well as various mutagens, carcinogens and teratogens are known to induce elevated levels of morphologically abnormal sperm in mice. The objectives of this study are 1) to further develop and apply the detection of morphologically abnormal mouse sperm as a rapid, simple quantitative assay of the pathologic response of the male gonad to toxic agents, 2) to extend the studies in the mouse to the hamster and 3) to develop the methodology of automated scoring of abnormally shaped sperm, especially after the exposure of the male to toxic agents. Of special interest are possible effects of the chemical pollutants associated with the recovery, process stream and emission of nonnuclear sources of energy especially coal gasification and oil-shale extraction in situ.

To accomplish these objectives, groups of test mice have received subacute or chronic exposures by injection, inhalation or dermal application as is appropriate. The percent of abnormally shaped epididymal sperm will be determined as a function of dosage and time after exposure. These results will be compared to those obtained by more conventional mutagens, carcinogens and teratogens. Preliminary studies with the hamster and mouse have shown that these two species are qualitatively very similar in response. Furthermore, we are attempting to distinguish sperm morphology in these species based on suggested differences in fluorescent dye uptake. These results may well lead to automated analyses of sperm morphology.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Andrew Wyrobek	DATE 27/10/76

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO. #2	PROJECT OFFICER Dr. George E. Stapleton
	AGENCY STAFF *(Intramural)*		RESPONSIBLE ORGANIZATION AAES/ERDA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60K	1976	Three	June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAN

TITLE OF PROJECT
Development of an In Vitro Assay for Co-Carcinogensis of Coal/Oil Shale Der.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Byfield, John E., Dept. of Radiology (UCSD), Professor of Radiology and Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine, UCLA School of Medicine, 900 Veteran
Avenue, Los Angeles, Calif. 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The object of this investigation is to develop an in vitro assay capable of detecting the co-carcinogenic potential (with x-rays) of materials produced during coal and oil shale processing. Initially it was proposed to utilize mouse tissue cultured cells and an already established transformation assay. Initial experiments indicated that rodent cells may process lesions induced by alkylating agects different from human cells and that therefore their use as screening materials might be misleading. This was shown by demonstrating that a variety of DNA damaging agents yielded significantly different effects on varicus cell lines when measured by a variety of techniques. It was hypothesized that a central difference between the lines (rodent versus human) may be the "activation of oncogenesis" related to the strand breakage induced, rodent lines carrying tranforming virus materials of a complete or incomplete nature, which is lacking in most human target cells. This is being evaluated through cell hybridization analysis using hybrids made by sendai-virus fusion of cells lacking either (a) different DNA repair enzymes or (b) (potential) RNA viruses.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
School of Medicine (UCSD)		10/22/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	Dr. George E. Stapleton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50,000	76			July 1976

*Funds approximate not for citation · 168 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0031

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAN

TITLE OF PROJECT: EFFECTS OF AGENTS ASSOCIATED WITH COAL AND OIL SHALE EXTRACTION, CONVERSION, OR UTILIZATION ON CELL-CYCLE KINETICS AND ON CHROMATIN/CHROMOSOME STRUCTURE

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. A. Tobey, Staff Member, Cellular and Molecular Biology Group (H-9)

H. A. Crissman, Staff Member, Biophysics and Instrumentation Group (H-10)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Los Alamos Scientific Laboratory, University of California, Health Division (MS881),
Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is essential that the ERDA/EPA provide a means for detecting and monitoring damage to human populations as a result of exposure to various toxic chemical and physical agents. To obtain an idea of the parameters to be monitored in humans, it is necessary first to establish the effects of agents on cells in simpler model systems. Earlier experience with drugs which act as carcinogens and teratogens has convinced us that changes in population cell-cycle distribution and alterations in chromatin structure may provide useful early indicators of sublethal damage to cells exposed to hazardous agents. We propose to examine alterations in these parameters following exposure to specific energy-related toxic substances in currently available tissue-culture systems which show promise as a predictive indicator of response of human populations. A technique has been developed that allows preparation of both cycling and noncycling cell populations in tissue culture, mimicking these classes of somatic cells in humans. By combining autoradiography, cell number enumeration, and flow microfluorometry, it will be possible to obtain highly detailed information regarding the cellular kinetic response of both arrested and cycling populations to treatment with toxic agents. Results obtained to date indicate that DNA-interactive agents elicit different types of kinetic responses in treated cells, indicating a degree of specificity of interaction between various alkylating and intercalating agents and the genome.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Robert A. Tobey	DATE 11-15-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George E. Stapleton
☐	AGENCY STAFF *(Intramural)*	3	RESPONSIBLE ORGANIZATION ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

Funds Estimate* $50,000	76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE July 1976

*Funds approximate not for citation., AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAN

TITLE OF PROJECT
InVivo Screening for Gene Mutations in Mouse Germ and Somatic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. L. Russell
L. B. Russell
Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In screening for mutagenic agents it is important to include mammalian tests for gene mutations. In this project, identification of mutagens associated with coal and oil shale technologies that can induce gene mutations and small deficiencies will be accomplished by scoring for (a) transmitted specific-locus mutations induced in germ cells and (b) somatic mutations in coat color genes.

The specific-locus method developed by us has been employed extensively in radiation work and has already proved its usefulness in chemical mutagenesis studies. It is the only established, reliable and definitive test for transmitted gene mutations and small deficiencies currently available in mammals. Two polycyclic hydrocarbons that might be a human hazard as the result of coal liquefaction and gasification processes, namely, benzo[a]pyrene and 7,12-dimethylbenz[a]anthracene, are now being tested.

In order to make the method economically efficient for screening purposes, it will be used to test whether there is anything mutagenic in a whole mixture of compounds, for example, in an effluent. One mixture from a coal conversion process that has just become available after studies with nonmammalian systems is now being used in preliminary toxicity tests.

An in-vivo somatic-mutation method, developed by us in an earlier X-ray experiment, has now been explored for its usefulness in the prescreening for germinal point mutations induced by chemicals. In an array of seven compounds tested, we found parallellism with spermatogonial specific-locus mutation rates, indicating that the in vivo somatic-mutation test may detect point mutations in addition to other types of genetic changes that lead to expression of the recessive. The method is now being used to test fractions from coal-conversion processes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, ...)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
L. B. Russell
L. B. Russell

DATE
10/12/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
4

PROJECT OFFICER
Dr. George E. Stapleton

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$175,000	76			July 1976

*Funds approximate not for citation. 66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Chemical Induction of Chromosomal Aberrations in Mouse Germ Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. M. Generoso
Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A study has begun on three polycyclic hydrocarbon compounds for chromosomal aberration effects in male and female mice.

For each chemical the following experiments will be performed:

(a) Determination in males and females of maximum tolerated doses for single treatment and for repeated treatment (daily administration for four weeks).
(b) Dominant-lethal and heritable translocation studies on treated postmeiotic and late meiotic male germ cells. This will be done on matings within one week after the last day of treatment of males given repeated doses.
(c) Dominant-lethal study on early meiotic spermatocytes and differentiating gonia. In this study males treated with a single acute dose will be mated during 30 to 42 days after treatment.
(d) Dominant-lethal and total reproductive capacity studies on dictyate oocytes of females that received single acute dose.
(e) If dominant-lethal effects are induced in treated females, an X-chromosome loss study will be performed to determine whether the effect is maternal or genetic.
(f) Dominant-lethal studies on postcopulation germ cells. Two experiments will be done -- one shortly after sperm entry and another during the first DNA synthesis prior to cleavage.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR W. M. Generoso	DATE 10/11/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Dr. George E. Stapleton
☐	AGENCY STAFF (Intramural)	5	RESPONSIBLE ORGANIZATION ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$53,000	76			July 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAN

TITLE OF PROJECT
Mutagenicity Assay of Fractionated Coal-Conversion Products

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. L. Epler
Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Using rapid screening genetic assays ("Ames System"), the group is attempting to identify mutagenic agents associated with coal and oil shale extraction, conversion or utilization.

Primary and subfractions of products and aqueous discharges are being assayed for the ability to inactivate and/or revert histidine requiring mutants of Salmonella. Potential mutagenic fractions will be identified and attempts will be made to ascertain the specific compound(s) responsible for the mutagenic action.

Parallel bioassays are being carried out with selected materials in yeast, Drosophila, and human leucocytes. Thus, the validity of short-term testing for genetic damage will be ascertained.

The preliminary fractionations have been carried out and the genetic assays are in progress. These investigations are the initial attempts to monitor environmentally important processes for genetic damage. The value of short-term testing as a pre-screen for carcinogenesis of environmental effluents is being considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR J. L. Epler J. L. Epler	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	6	Dr. George E. Stapleton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$125,000	76			July 1976

*Funds approximate not for citation. 6F AND SI-SIE 76A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA EPA-IAG-D6-E681-BAN

TITLE OF PROJECT
Genetic Effects from Electric Fields at the Chromosomal Level of Drosophila

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. P. Hungate, Staff Scientist, Biology Department
R. L. Richardson, Senior Research Scientist, Physics and Instrumentation Dept.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Objective: This work seeks to identify the potential for change in the genetic material following exposure to DC and AC electric fields.

2) Approach: Small organisms or cell systems are exposed to uniform and well characterized electric fields and subsequently analyzed for the presence of genetic change.

3) Plans and Progress: 30 cm Copper discs with rolled edges and central connectors were fabricated as the electrodes, using lucite rings 1.5 to 6 cm high as spacers. Initial tests in which Drosophila were simultaneously exposed to 1500 rads gamma radiation and to a 300 V/m DC field failed to show an increased frequency of sex linked lethals attributable to the DC field. Other exposures of Drosophila to the DC field are inpprogress using the Muller-5 test to evaluate frequencies of induced sex linked lethals. Cultures of Salmonella were obtained from Dr Bruce Ames and are being used to evaluate mutagenesis in bacteria.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.): N/A
SIGNATURE OF PRINCIPAL INVESTIGATOR: F P Hungate
DATE: 10/11/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 7
PROJECT OFFICER: Nell W. Fraser
RESPONSIBLE ORGANIZATION: ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
87,000	76	One	6-1-75	5-31-78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E-681-BAN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
CHEMICAL CARCINOGENESIS OF CULTURED RABBIT ENDOMETRIAL CELLS - HORMONAL INTERACTIONS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: L.E. Gerschenson

Co-Investigator: E. Conner and J. Murai

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine and Radiation Biology - Univ. of Calif. at Los Angeles
900 Veteran Ave., L.A., Ca. 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

a) The overall objective of this project is to study the possible hormonal regulation of the effect of chemical carcinogens on cultured endometrial cells. This model has been shown to be responsive to the "in vitro" addition of estrogens and progestins.

Since estrogens have been found to have a "promoting" role for endometrial adenocarcinoma, while progesterone is used for its treatment it appeared reasonable to explore this avenue of research.

b) The goals set for the current period were to develop the methods to study cytotoxicit of chemical carcinogens (inhibition of DNA synthesis) and to study the possible regulatory effect(s) of ovarian hormones.

c) Current and future goals include the study of the effect of hormones on the uptake and binding of chemical carcinogens by radioautography and the "in vivo" transformation of the cells. All these studies are or will be performed in primary cultures of rabbit endometrial cells.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Medical School	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Oct 21, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
8

PROJECT OFFICER
Dr. George E. Stapleton

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$30,000	76			7/76

*Funds approximate not for citation. '66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681-BAO

TITLE OF PROJECT
Pulmonary Carcinogenesis Test System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. J. Michael Fry, Senior Physiologist
W. E. Kisieleski, Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Biological and Medical Research, Argonne National Laboratory,
9700 S. Cass Avenue, Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for those purposes.

A number of biological active pollutants, in particular polycyclic hydrocarbons, are difficult to eliminate from the effluents of the various types of processing plants which are either now in use or are proposed. Some of the polycyclic hydrocarbons are known pulmonary carcinogens but neither the precise nature of the effluent content nor the carcinogenicity of all of the identified compounds are known. Therefore there is a need for appropriate, rapid and economic methods of assay of the oncogenic potential of compounds and for the study of pulmonary tumorigenesis.

The objectives are to: (1) Establish appropriate test systems for the assessment of tumorigenic potential of compounds. (2) Carry out the experiments in such a way that information about the mechanisms of susceptibility including the relationship of proliferation is obtained. (3) Determine whether pulmonary carcinogens act additively or multiplicatively in the mouse.

The aims of the current work are: (1) to establish the spontaneous prevalence and age-specific mortality rates of lung tumors in BALB/c and C57Bl/6 mice; (2) to compare the tumorigenic effects of in vitro and in vivo exposure to benzo(a)pyrene; (3) to test the use of nude athymic mice for transplants of lung tissue from different species in order to compare species susceptibility for tumorigenesis.

We have established the prevalence and mortality rates for lung tumors in male and female $B6CF_1$ and are currently completing the study of prevalence in the parent strains C57Bl/6 and BALB/c. It should now be possible to distinguish induction and advancement of time of appearance of tumors and whether carcinogens act additively.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 10/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF *(Intramural)*	1	
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$83,000	76			7/76

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Method for Utilizing Teeth as an Indicator of Tissue Dose for Trace and Heavy Metals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Louis G. Stang, Jr., Department of Applied Science, Head, Radionuclide Research Division
William Sachs, Department of Applied Science, Associate Chemist, 100%

NAME AND ADDRESS OF APPLICANT INSTITUTION

Brookhaven National Laboratory
(Associated Universities, Inc.)
Upton, New York 11973

(Tel. L. Stang - 516-345-4451))

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: To develop and demonstrate a simple rapid inexpensive method for determining trace concentrations of toxic energy-related elements in the human body. To utilize this method to establish "normal" baseline concentrations, to search for causal relationships between concentrations of given elements and occupational, environmental, and individual health factors. Background: For many chemical elements little is known about what constitutes "normal" concentrations in the human body now or at various prior stages of industrialization or about how these concentrations vary with the individual or with intensity and duration of exposure. Yet many of these elements have already been detected in the environment and others are likely to be added. (2) Approach: Teeth, being ideal biopsy samples easily and readily available from statistically large numbers of people, will be analyzed for all elements have $Z>15$ and the results will be statistically analyzed in a search for correlations and trends. (3) Current Plans and/or Progress: A report based on an exhaustive survey of the literature on the trace element composition of hard dental tissues is in preparation. This survey tends to support the hypothesis, at least for some elements, that concentrations in teeth depend upon ambient environmental concentrations. As a preliminary to chemical analyses of large numbers of teeth that are being collected, data on trace element levels in human enamel have been obtained from other sources and will be subjected to statistical pattern recognition analysis. Ancillary nationwide data on trace element levels in soils, water supplies, and atmospheric particulate matter are also being obtained from other sources in order to provide material with which to attempt to correlate data on teeth.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR Louis G. Stang

DATE 11/9/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 2

PROJECT OFFICER Dr. George D. Duda

RESPONSIBLE ORGANIZATION ERDA

Funds Estimate* $55,000

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE July 1976

*Funds approximate not for citation. 164 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
The quantitative evaluation of hazardous chemicals using a closed aquatic test system

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Setlow, R. B., Senior Biophysicist, Biology Department **(Tel. 516-345-3391)**
Hart, R. W., Consultant, Assoc. Prof. Radiology, Ohio State University

NAME AND ADDRESS OF APPLICANT INSTITUTION
Biology Department
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) To develop a new comparative test system, using clones of the fish Poecilia formosa, capable of detecting the carcinogenicity of chemicals by treatment of cells in vitro or by treatment of whole animals.

2) The fish P. formosa may be grown in clones and hence there is no immunological barrier to the transplantation of cells from one animal to another. The fish are easily raised in large numbers for comparatively low costs. Past work has shown that if cells from thyroid tissue are treated in vitro by UV radiation or by N-acetoxy-AAF and then injected into isogenic recipients, they give rise to large numbers of invasive thyroid carcinomas. We have reasonable dose response curves for these effects.

3) We propose to test the carcinogenicity of a number of potentially hazardous agents associated with coal and oil shale technologies by 1) treating cells in vitro with the presumptive carcinogen, injecting the cells into fish and scoring the recipient fish for tumors one to two years later, and 2) to introduce the presumptive carcinogens directly into the water of fish tanks to assess their effects on the whole animal.

The fish are maintained in water purified by filtration and UV radiation in an irradiator external to the tank. Under such conditions there is little loss of animals from infection or disease. Fish were injected with cells treated with DMBA or with DMBA epoxide. They will be killed and autopsied in the spring of 1977.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* NA	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Nov. 1, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
G.D. Duda

RESPONSIBLE ORGANIZATION
ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	76	1	1/76	7/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Reproduced from
best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681-BAO

TITLE OF PROJECT

Quantitative Mutagenesis Testing in Mammalian CEllular Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Hatch, F.T., Principal Investigator, Biomedical Sciences Division
Carver, J.H., Lead Scientist
Branscomb, E.W.
Galas, D.J.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory Phone: (415) 447-1100 ext 3563
P.O. Box 808
Livermore, Ca. 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives of this project are: (1) to develop and apply quantitative multiple-marker assays utilizing cultured mammalian cells for the evaluation of potential mutagenic effects of agents derived from energy technologies, and (2) to use these existing and newly-developed biological screening systems for the identification of mutagenic agents associated with coal and oil shale extraction, conversion, or utilization.

This program proposes the use of multiple drug-resistance markers for forward mutation in cultured Chinese hamster ovary (CHO) cells, as well as in vitro and host-mediated in vivo/in vitro procedures in the Syrian hamster embryo (SHE) system. The markers being developed measure the frequency of forward mutation at the recessive azaadenine-resistant marker, the X-linked azaguanine-resistant phenotype, and the dominant ouabain-resistant locus. Established procaryote and lower eucaryote systems will be used for comparison and reference; the most satisfactory markers in all systems will then be combined into a standard protocol in which each of the gene loci can be measured for mutation following exposure to a particular test agent or combination thereof.

Progress to date has been: (1) Selection and validation of three CHO cell lines heterozygous at the adenine phosphoribosyltransferase locus. These stock lines have been tested for optimal cell plating, selecting drug concentration, and expression time; the cell lines are now being used in triple marker mutagenesis experiments. (2) The SHE system has been tested extensively-plating efficiency optimized, ouabain resistance determined, with work currently in progress to optimize the azaguanine-resistance marker. Both CHO and SHE systems have been tested with the standard mutagen EMS, and experiments utilizing specific hydrocarbons relevant to energy technology are now underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* NA	SIGNATURE OF PRINCIPAL INVESTIGATOR Frederick T. Hatch	DATE 10/26/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF *(Intramural)*	#4	RESPONSIBLE ORGANIZATION AAES/ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED $100K	F.Y. 1976	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. Three	STARTING DATE June 1976	ESTIMATED COMPLETION DATE June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	Form Approved OMB No. 158-R0081
	PROJECT NO. (Do not use this space) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681-BAO

TITLE OF PROJECT

Development of Cytochemical Markers for Cell Transformation and Carcinogenesis

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mayall, B.H., Principal Investigator, Biomedical and Environmental Research Division
Carver, J.H.
Jensen, R.H.
Dolbeare, F.A.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P.O. Box 808
Livermore, Ca. 94550

Phone: (415) 447-1100 ext. 3587

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To develop rapid, sensitive, and economical systems for the in vitro and cytological assay for carcinogenic effects of substances involved in the extraction, conversion and utilization of nonnuclear energy sources, with particular consideration of in situ coal gasification, shale-oil utilization, coal-burning power plants, and geothermal power plants.

Our approach is based on the development of cytochemical markers for cell transformation, and on our ability to quantitate such markers by microfluorometry and by flow system analysis and sorting. There are two phases to this work: (a) the development of appropriate test systems whose response is defined by well characterized and representative carcinogenic agents, and (b) the application of such systems to substances released by energy technologies, and including testing with whole and fractionated samples of effluents.

The intracellular levels of several hydrolytic enzymes have been chosen as potential early indicators of cell transformation. Using synthetic fluorogenic enzyme substrates, the levels of four proteases and five esterases have been measured on monolayer cultures of Chinese Hamster Ovary cells, Syrian Hamster Embryo cells and Human Lung fibroblasts (both normal and viral transformed). Hydrolase profiles generated from these measurements indicate significant differences between cell types.

Flow cytometry analysis on WI38 cells (normal versus SV-40 transformed) indicates that intracellular Cathepsin B1 and Alkaline Phosphatase levels can be used to distinguish individual normal cells from transformed cells. These same enzyme assays will be used to determine an optimum in-vitro system for subsequent carcinogen treatment and flow analysis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NA	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 27/10/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Dr. George D. Duda
	AGENCY STAFF (Intramural)	#5	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION AAES/ERDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$325K	1976	Three	June 1975	June 1980

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

TITLE OF PROJECT ANALYSIS OF THE EFFECTS OF ENERGY-RELATED TOXIC MATERIALS TO KARYOTYPE STABILITY IN MAMMALIAN CELLS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

L. L. Deaven, Principal Investigator, Staff Member, Cellular and Molecular Biology Group

Evelyn W. Campbell, Staff Member, Cellular and Molecular Biology Group

Catherine Sanchez, Staff Member, Cellular and Molecular Biology Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Los Alamos Scientific Laboratory, University of California, Health Division (MS881),
Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this program are to develop systems for the rapid detection of karyotypic changes in mammalian cells as a result of exposure to energy-related environmental pollutants and to screen selected subjects utilizing these systems. Flow microfluorometry (FMF) of isolated, fluorescently stained chromosomes will be used to identify chromosome aberrations, and FMF of stained intact cells will be used to detect mitotic nondisjunction. Cadmium will be used as the clastogenic agent in the development of a test system. We have demonstrated that chromosome analysis can be accomplished by flow systems in mammalian cells with relatively simple karyotypes (Chinese hamster 2N = 22). Cadmium at low concentrations (2×10^{-6} M) is a potent clastogen. It induces primarily chromatid-type aberrations. We have also demonstrated that tolerance to the damaging effects of cadmium can be induced in fibroblast cells in culture by long-term exposure of the cells to sublethal concentrations (2×10^{-7} M) of cadmium. We plan to repeat these experiments on human fibroblast and lymphocyte cells in vitro and to extend these studies to other toxic agents associated with alternative energy technologies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR Larry L. Deaven

DATE 11-24-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF *(Intramural)*	6	RESPONSIBLE ORGANIZATION ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50,000	76			July 1976

*Funds approximate not for citation S AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA EPA-IAG-D6-E681-BAO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
SOMATIC CELL GENETICS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
B. J. Barnhart, Staff Member, Cellular and Molecular Biology Group (H-9)
R. T. Okinaka, Staff Member, Cellular and Molecular Biology Group (H-9)
S. H. Cox, Staff Member, Cellular and Molecular Biology Group (H-9)

NAME AND ADDRESS OF APPLICANT INSTITUTION
Los Alamos Scientific Laboratory, University of California
Post Office Box 1663
Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The genetics program is currently isolating temperature-sensitive (ts) mutants (variants) of the mammalian cell lines CHO and DON CCL for use in studying the genetics of cell life-cycle traverse. In addition to these ts mutants, we have isolated several auxotrophic clones and have developed the HGPRT$^+$ → HGPRT$^-$ mutation system for use in assessing the mutagenicity of suspected carcinogens derived primarily from coal gasification and shale extraction processes. The Ames Salmonella/microsome test system will serve as an ancillary test for mutagenicity. The mammalian cell forward and reverse mutation systems and the Ames bacterial test system are currently functional in this Laboratory. Temperature-sensitive life-cycle traverse mutants are being analyzed to determine in what phase of the life cycle the ts phenotype is expressed using the LASL flow microfluorometer (FMF II).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR Benjamin J Barnhart	DATE 11-5-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF (Intramural)	6&7	
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000	76		1975	1977

*Funds approximate not for citation.

…66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E681-BAO

TITLE OF PROJECT
DETECTION OF EARLY CHANGES IN LUNG CELL CYTOLOGY BY FLOW-SYSTEMS ANALYSIS TECHNIQUES

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
J. A. Steinkamp, Principal Investigator, Staff Member, Biophysics and Instrumentation Group
G. C. Salzman, Staff Member, Biophysics and Instrumentation Group
M. Ingram, Staff Member, Biophysics and Instrumentation Group
K. M. Hansen, Staff Member, Biophysics and Instrumentation Group
J. S. Wilson, Staff Member, Mammalian Biology Group

NAME AND ADDRESS OF APPLICANT INSTITUTION
Los Alamos Scientific Laboratory, University of California, Health Division (MS881),
Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this health effects program is the application of modern automated cytology techniques for assessment of damage to human populations resulting from exposure to physical and chemical agents associated with oil shale and coal extraction, conversion, and utilization. The approach is to apply unique flow-system cell-analysis and sorting technologies developed at the Los Alamos Scientific Laboratory to determine cytological and biochemical indicators of early atypical changes in exposed lung epithelium using the Syrian hamster initially as a model test system. The current plans are to adapt cell preparation and staining methods developed for flow systems to characterize lung cells from normal and exposed hamsters using the multiparameter cell separator and multiangle light-scatter systems. This includes acquisition of respiratory cells by lavaging the lungs with saline, adapting cytological techniques developed on human gynecological specimens to hamster lung epithelium for obtaining single-cell suspensions, utilization of existing staining techniques for measurement of cellular biochemical properties, and initial characterization of lung cells using flow analysis instrumentation. Progress has been achieved in measuring DNA content, total protein, esterase activity, cell size, nuclear and cytoplasmic diameters, and multiangle light-scatter properties of exfoliated hamster lung cell samples composed of macrophages, leukocytes, epithelial, and columnar cells. As this new technology is adapted further to analyze lung cells from hamsters and subsequent characterization studies are completed, measurement of changes in physical and biochemical cell properties as a function of exposure to toxic agents associated with synthetic fuel energy production will be performed, with eventual examination of sputum samples from occupationally exposed humans.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR John A. Steinkamp	DATE 11-24-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF *(Intramural)*	7	RESPONSIBLE ORGANIZATION ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

Funds Estimate[1]	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50.000	76			July 1976

[1] Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA *EPA-IAG-D6-E681-BAO*

TITLE OF PROJECT
Development of Permanent Epithelial Cell Lines

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. Selkirk

Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: (1) To develop the means by which chemicals associated with non-nuclear energy generation, especially agents arising from coal and oil shale extraction, can be screened for potential carcinogenic activity reliably, quickly and cheaply relative to current animal exposure techniques; (2) To utilize appropriate cultured cells developed in (1) for the study of hydrocarbon carcinogen metabolism to active forms and the mechanism of chemical carcinogenesis.

Approach: A research group with two discrete but closely related approaches to these problems is being developed. These are (1) Cell Biology. The major focus here will be the development of permanent cell lines of epithelial origin (human, when possible and appropriate) which possess the enzymatic equipment for carcinogen activation and which are transformable with high frequency. (2) Biochemistry. Principal focus will be the study of metabolism of polycyclic hydrocarbons in various cell lines developed in approach (1), to establish with certainty the "ultimate" carcinogenic metabolite, using primarily high pressure liquid chromatography techniques.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR James K Selkirk	DATE 10/8/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 8	PROJECT OFFICER **Dr. George D. Duda** RESPONSIBLE ORGANIZATION **ERDA**

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60,000	76			July 1976

*Funds approximate not for citation. 4 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

TITLE OF PROJECT
Screening for the Mutagenicity and Carcinogenicity of Energy Related Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. W. Hsie
Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Our major efforts have concerned dose-response studies of benzo(a)pyrene (B[a]P) and its metabolites on the mutagenicity (as measured by 6-thioguanine resistance) and cytotoxicity (as measured by single cell survival) in the Chinese hamster ovary (CHO) system [Hsie et al. (1975) Som. Cell Gen. 1, 247]. We have chosen to study B(a)P as a model environmental agent because polycyclic hydrocarbons such as B(a)P are major nonnuclear energy related pollutants especially of coal-related energy processes such as COED Coal-Liquifaction ("Syncrude"). B(a)P requires metabolic activation by mixed-function oxidases to convert B(a)P into active metabolites. Since CHO cells do not contain appreciable microsomal activation activity to metabolize B(a)P, the direct biological activity of its metabolites can thus be studied quantitatively. The cytotoxicity and mutagenicity of 6-phenols (1-, 2-, 3-, 7-, 8- and 9-hydroxylbenzo[a]pyrene), trans-7,8-dihydroxyB(a)P-7,8-diol (B[a]P-7,8-diol), 4,5-dihydroxyB[a]P-4,5-epoxide and B(a)P-9,10-epoxide have been tested. B[a]P-7,8-diol and B[a]P-4,5-epoxide are highly mutagenic as their mutagenicity can be detected as low as 2.5 μg/ml (approximately 5 to 6-fold over the spontaneous frequency). While all 6 phenolic derivatives of B[a]P are nonmutagenic, they are all cytotoxic with 7-hydroxyB[a]P being the least toxic while 8-hydroxyB[a]P exerts the highest toxicity. B[a]P-9,10-epoxide is both non-toxic and non-mutagenic up to 20 μg/ml tested. Additional dose-response studies are underway to quantitate the cytotoxicity and mutagenicity of these and other B[a]P metabolites. Our study shows that 7,8-diol and 4,5-epoxide derivatives of B[a]P are powerful mutagens. Since most carcinogenic polycyclic hydrocarbons are mutagenic, it is likely that these diol and epoxide derivatives are the ultimate carcinogenic metabolites of B[a]P. We have just started screening for the mutagenicity of various fractions from synthetic fuel process in this mammalian cell mutational assay. Meanwhile, efforts to establish a sensitive and quantitative in vitro mammalian cell transformation assay are being continued.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR A. W. Hsie	DATE 10/11/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	9	Dr. George D. Duda
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$80,000	76			July 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

TITLE OF PROJECT
Evaluation of the Tumorigenic Enhancing Potential in Liver of Polycyclic Aromatic Hydrocarbons

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Carl Peraino, Biochemist
R. J. Michael Fry, Senior Physiologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Biological and Medical Research, Argonne National Laboratory,
9700 S. Cass Avenue, Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Our studies have shown that dietary phenobarbital enhances hepatic tumorigenesis in rats previously fed the liver carcinogen 2-acetylaminofluorene (AAF). This sequential treatment procedure has proven useful as a means of detecting tumorigenic enhancers in the environment, and has shown that the insecticide, DDT, and the food antioxidant, butylated hydroxytoluene, possess enhancing activity. The objective of the present work is to use the sequential treatment protocol to test the tumorigenic enhancing activity of the polycyclic aromatic hydrocarbon benz(a)anthracene, which serves as a model for energy-related pollutants. The approach used involves the short-term feeding of AAF followed by the feeding of the test hydrocarbon. Increased tumor incidence in this group in comparison with that in rats receiving AAF or the hydrocarbon alone denotes enhancement.

Since the study is still in progress final conclusions are not yet possible. However, on the basis of the data obtained thus far, 0.025% dietary benz(a)anthracene appears to exhibit little or no tumorigenic enhancing activity. Since acute exposure studies indicated that benz(a)anthracene is, like phenobarbital, an effective stimulator of liver growth and microsomal enzyme activity, additional dietary studies at higher dose levels may be necessary to permit the unequivocal evaluation of the tumorigenic enhancing potential of this hydrocarbon.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Carl Peraino

DATE
10/26/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
10

PROJECT OFFICER
Dr. George D. Duda

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*
$52,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
June 1975

ESTIMATED COMPLETION DATE
June 1980

*Funds approximate not for citation. 166 AND SI-SIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAO

TITLE OF PROJECT
A Bacteriophage System for Screening of Carcinogenic Polycyclic Aromatic Hydrocarbons

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Samuel B. Weiss,	Associate Director of FMI Professor of Biochemistry and Microbiology
Dr. Wen-Tah Hsu,	Assistant Professor of Biochemistry Research Associate of the FMI

NAME AND ADDRESS OF APPLICANT INSTITUTION
The Franklin McLean Memorial Research Institute
The University of Chicago
950 East 59th Street, Chicago, Illinois 60637

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The use of bacterial viruses as a means for detecting potentially harmful substances stems from earlier studies in this laboratory which demonstrated that certain hydrocarbons known to be carcinogenic in rats also inhibit the replication of bacterial viruses. We have now confirmed the above findings by examining some 30 different hydrocarbons and their derivatives and have shown that compounds, which are either known to be strong alkylating agents, or ones which can be converted into alkylating agents by the action of intracellular enzymes, block phage replication. We propose to use the infectious-nucelic acid system to examine other potentially toxic substances, however, we are also interested in determining the biochemical mechanism by which these reactive hydrocarbons block the expression of genetic information.

We propose to devise several different in vitro systems to examine the effect of active hydrocarbons on the process of transcription and translation. We should like to obtain answers to the following kinds of questions. 1) Does the binding of hydrocarbons to DNA and RNA affect the template activity of these nucleic acids with respect to DNA and RNA synthesis, and if so, in which way; e.g., is the efficiency of synthesis reduced, are errors in base insertions made, etc. 2) Do active hydrocarbons bind to DNA and RNA polymerases, and if so, how do such altered enzymes differ in their enzymatic properties. 3) Can hydrocarbon-RNA complexes serve as templates for protein synthesis; if so, are the proteins made the same or different from noncomplexed templates. 4) What is the effect on protein synthesis when ribosomes are reacted with active hydrocarbons.

Answers to the above questions should help in understanding how these potent chemical agents (the aromatic hydrocarbons) may influence several important biological processes within the cell.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Samuel B. Weiss	Oct. 28, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER / RESPONSIBLE ORGANIZATION
☐	AGENCY STAFF *(Intramural)*	10	Dr. George D. Duda
☒	NEGOTIATED CONTRACT		ERDA
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$52,000	76			July 1976

*Funds approximate not for citation. SS AND SI-SIE 76A WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E-681-BAO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
DEVELOPMENT AND USE OF DIFFERENTIATED CELL CULTURES FOR EVALUATION OF TOXICOLOGICAL AGENTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Principal Investigator: L.E. Gerschenson
Co-Investigators: J. de Vellis, I. Harary, H. Herschman, L. Lake and J. Berliner

NAME AND ADDRESS OF APPLICANT INSTITUTION
Laboratory of Nuclear Medicine and Radiation Biology; Univ. of Calif. at Los Angeles
900 Veteran Avenue, Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The aim of this project is to study the molecular mechanism(s) of acute toxicity in differentiated liver, muscle and brain permanent cell lines. For this purpose the effect of lead upon the heme pathway and the organ-specific functions of the cell lines is under investigation. We propose to validate these in vitro models as rapid, simple and reliable systems to screen for energy-related pollutants.

Lead was found to: a) modulate the levels of the enzymes δ-aminolevulinate synthetase and aminolevulinate dehydratase in cultured liver cell lines; b) have no effect on the induction by glucocorticoids of the enzyme tyrosine-aminotransferase in the same cell line; c) inhibit the induction of glycerophosphate dehydrogenase by glucorcorticoids in cultured glial cells and the content of the specific protein S-100; d) inhibit myogenesis in cultured muscle cells and e) induce mitochondrial damage (E.M. studies) in liver and glial cell lines.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* UCLA School of Medicine	SIGNATURE OF PRINCIPAL INVESTIGATOR L E Gerschenson	DATE Oct 21, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. George D. Duda
☐	AGENCY STAFF *(Intramural)*	12	RESPONSIBLE ORGANIZATION ERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000	76			July 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Therapy of Non-radioactive Toxic Metal Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
A. Lindenbaum, Biochemist, Principal Investigator.
D. W. Baxter, Research Associate (Summer 1975); N. G. Doan. Student Aide (Summer 1975)
E. M. Sorensen, Postdoctoral Appointee; V. L. Riotte, Student Associate (Fall 1976).
[All above in Division of Biological and Medical Research.]

NAME AND ADDRESS OF APPLICANT INSTITUTION
Argonne National Laboratory
9700 So. Cass Avenue
Argonne, IL 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The hazard to man represented by many toxic metals of environmental concern (e.g., Pb, As, Cd, Hg) depends upon the extent to which they become concentrated and retained in critical compartments of living tissues. By measuring the degree to which a metal will undergo hydrolysis, protein binding, and/or incorporation within cells in selected animal species, the critical parameters necessary to devise effective therapeutic measures may be determined. The basic objectives of this work, therefore, are to identify and measure critical concentrations of toxic metals in organs, cells, and subcellular organelles of mammalian species and to devise therapeutic procedures for reducing these concentrations to acceptable levels.

For two reasons, initial efforts are concerned with lead. First, lead is one of the most ubiquitous of environmental pollutants. Second, some of our recent work on actinide decorporation may offer a direct therapeutic application in the case of lead poisoning. Our first studies demonstrated differences in the deposition of lead acetate and lead citrate in mouse tissues (D. W. Baxter et al., Proc. 15th Ann. Hanford Life Symposium, in press, 1976). Present plans include the treatment of young mice, having a specific, well-established burden of stable lead containing lead-210 tracer, with DTPA and DTPA esters. Quantitative measurements will be made of the tissue distribution of ^{210}Pb, using γ-ray spectrometry, and of the cellular localization of stable lead, using energy dispersive X-ray spectrometry. In addition, using optical and electron microscopy, we will undertake morphometric analyses of cellular and ultrastructural changes in the brain, kidney, gut wall, and liver during therapy. These data should provide useful information in determining therapy regimens resulting in maximal lead removal with minimal tissue damage.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	A. Lindenbaum (MHB)	10/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	
	AGENCY STAFF *(Intramural)*	2	PROJECT OFFICER Dr. Murray Schulman
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$111,000	76			July 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E-681-BAP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Influence of Diet on the Gastrointestinal Absorption of Cadmium

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

H. E. Walburg, Director (Principal Investigator)
UT-CARL
Oak Ridge, Tennessee 37830
(615) 483-8611, Ext. 3-4205

R. J. Chertok, Assoc. Prof.
L. B. Sasser, Asst. Prof.

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Tennessee Comparative Animal Research Laboratory
1299 Bethel Valley Road
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program is a comparative study of the influence of nutrient composition on the gastrointestinal absorption of Cd. The absorption of Cd occurs in competition with the absorption of specific essential nutrients which accounts in part for the variable absorption characteristics of Cd and could also determine the degree and mode of toxicity.

Animals maintained on diets modified with Ca, P, vitamin D or protein are orally administered small to moderate doses of ^{115m}Cd. Absorption is determined by serially sacrificing the animals and analyzing for radioactivity.

In vitro studies in the rat utilizing the everted sac technique are being conducted to determine (1) the kinetics of Cd absorption, (2) the effects of nutrient constituents on Cd absorption and (3) the effects of Cd on the absorption of various nutrients such as Ca, Fe, amino acids and sugars.

In addition studies will be conducted to determine the location of Cd within the gastrointestinal epithelial cells and the effects of Cd on cell metabolism by measuring changes in enzymatic activity.

Mature male rats were pretreated for 4 weeks with diets containing (1) adequate Ca and P, (2) low Ca and P, (3) high Ca and P, (4) high Ca and low P and (5) low Ca and high P. Rats from each diet were orally dosed with 10 μCi of Cd-115 m in solutions containing either 0, 5 or 25 mg of stable Cd. Preliminary results indicate that Cd absorption was increased in the high Cd dose by a wide Ca:P ratio or by diets high in both Ca and P. When both Ca and P levels were low, Cd absorption was not affected. Cadmium toxicity appeared to be much greater in rats receiving high Ca and low P diets.

The everted sac studies are in progress and kinetic data on tissue uptake and the lumen to serosa transfer of Cd are being collected and subjected to analysis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF (Intramural)	3	Dr. Murray Schulman
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$90,000	76			July 1976

*Funds approximate not for citation. 65 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)

SSIE

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E681-BAQ

TITLE OF PROJECT
The Mouse Oocyte System as a Monitor of Chemical Toxicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dobson, R.L., Principal Investigator, Biomedical Sciences Division
Felton, J.S.
Kwan, T.C.
Wuebbles, B.J.

NAME AND ADDRESS OF APPLICANT INSTITUTION
Lawrence Livermore Laboratory
P.O. BOx 808
Livermore, California 94550
Phone: (415) 447-1100 ext. 3557

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research project is directed at measuring effects produced in the intact mammal by exposure to chemical pollutants. Effects are measured at the cell population level, *in vivo*. Focus is on evaluating the teratogenic cytotoxicity of hydrocarbons and metals associated with nonnuclear energy production. Ovarian oocytes of developing mice are the cell population studied. Selected chemical agents are administered to groups of mice, each agent in several differing concentrations. Administration is by way of the pregnant mother during gestation and to offspring postnatally. Biochemical procedures and chemical assays are done as required to provide necessary quantitative dosimetry information. After exposure, surviving oocytes are enumerated microscopically in ovaries and compared to unexposed controls. In this way quantitative dose-response curves are obtained.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
NA

SIGNATURE OF PRINCIPAL INVESTIGATOR
R. Lowry Dobson

DATE
27/10/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
#1

PROJECT OFFICER
Dr. Dean R. Parker

RESPONSIBLE ORGANIZATION
AAES/ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$75K	1976	Three	June 1975	June 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

SECTION I

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E681-BAQ

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, California 94025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

A. D. Mitchell (439-62-8786) Principal Investigator, Cell Biologist, Biomedical Research Department

K. Stefos (452-68-7179) Postdoctoral Fellow in Cell Biology, Biomedical Research Department

M. V. McMacken (553-09-4277) Biochemist, Biomedical Research Department

TITLE OF PROJECT

Development of DNA Repair for Monitoring Human Health

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The nation's response to the needs for energy self-sufficiency could increase the number of hazardous agents that are released into man's daily environment. Efficient and economical systems are needed to predict human susceptibility to hazardous agents and to monitor human populations for adverse genetic effects which may be caused by unforseen mutagens. There is a high probability that these needs could be met by further development of DNA repair synthesis. The utility of the present in vitro DNA repair synthesis tests can be enhanced by developing in vivo DNA repair synthesis to measure organ and tissue specificities of responses to hazardous agents and by using these same tissues as the sources of metabolic activation enzymes for in vitro DNA repair synthesis assays. The significance of DNA repair synthesis will be further enhanced by examinations of DNA repair in prematurely condensed chromosomes and by correlations of the extent of DNA repair with measurements of cytogenetic aberrations, with mutagenesis of mammalian cells, and with carcinogenesis as measured by cell transformation.

TASK: ERR 1.15
AGENCY: ERDA
FUNDING: $60,000 - 76
PROJECT OFFICER: Dr. Dean R. Parkes

LEAVE BLANK

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAQ

TITLE OF PROJECT
Use of Mouse Specific-Locus Method to Quantify the Gene Mutation Hazard

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. L. Russell
Biology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There are two important aspects to quantification of mutagenesis in mammalian systems that score transmitted mutations. First, for compounds that are clearly mutagenic it is important to be able to evaluate what the mutation frequency would be at exposure levels likely to be experienced by the human population. Some chemicals have already shown a dose-response curve much steeper than linear, and the possibility of a threshold dose level exists. Second, for chemicals that show no mutagenicity in the sample of animals examined in a mammalian test system, it is important to have the sample size adequate to justify a quantified statement that the observed zero mutation rate excludes, with high confidence, the possibility that any mutagenicity of the compound could be higher than a certain low, acceptable level.

The specific-locus method in mice, the only reliable and definitive test for transmitted gene mutations currently available in mammals, will be used. Priority for these quantitative (e.g. dose-effect relationship) tests will be given to those compounds which meet at least some of the following criteria, namely, chemicals which are:- (a) mutagenic in our screening test with the specific-locus method, (b) mutagenic in our screening test for mouse somatic mutations in vivo, (c) mutagenic in any mammalian test system for transmitted chromosomal aberrations, (d) mutagenic in any other mammalian test system, (e) mutagenic in nonmammalian test systems, (f) chemically related to known mutagens.

Extensive testing with sulfur dioxide has given no evidence of mutagenicity. Benzo[a]pyrene, a compound that might be a hazard as a result of coal conversion processes, and which gave some mutagenic effect in screening tests, is now being thoroughly investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.) N/A	SIGNATURE OF PRINCIPAL INVESTIGATOR W. L. Russell W. L. Russell	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
x	AGENCY STAFF (Intramural)	2	Dr. Dean R. Parker
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$175,000	76			July 1976

*Funds approximate not for citation. 56 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BAQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
CROSS-PLACENTAL TRANSFER

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

P. L. Hackett, Ph.D., Biology Department
M. R. Sikov, Ph.D., Biology Department
D. D. Mahlum, Ph.D., Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratories
Biology Department
Richland, WA 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is concerned with heavy metals for which there is direct or inferential evidence for deleterious effects on prenatal development. It will define the specific influences of factors which affect the qualitative and quantitative aspects of the cross-placental transfer of certain heavy metals associated with energy production and their distribution throughout the fetoplacental unit as a function of time after exposure to define the tissues at risk and provide quantitative estimates of dose. In initial studies involving lead, transfer and distribution are being evaluated at four different gestational ages selected to represent stages in the continuum of embryonic and placental development. Intravenous, oral, and inhalation routes of administration, which will provide differences in the rate at which the metals are presented to the placenta as well as possible differences in their chemical binding in blood, are being compared. Since metabolism may be influenced by the mass administered, a low dose as well as one in the teratogenic range is being studied. This will provide a reference point for comparison with available data on teratogenesis as well as a basis for design of studies to establish dose-response relationships.

[redacted]

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
NA

SIGNATURE OF PRINCIPAL INVESTIGATOR
P L Hackett

DATE
10/6/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
Nell W. Fraser

RESPONSIBLE ORGANIZATION
ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100,000	76	One	6-1-75	5-31-78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E-681-BAQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Teratogenic and Mutagenic Effects of Trace Metals and Carcinogenic Hydrocarbons on Cultured Mammalian Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Jean de Vellis, Ph.D., Associate Professor of Anatomy
(213) 825-8734 (See address below)
Co-Investigators: L. Gerschenson, M.D.; H. Herschman, Ph.D.; and I. Harary, Ph.D.
Personnel: K. McCarthy, Ph.D., Postdoctoral Research Fellow, Toxicologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine and Radiation Biology, UCLA
900 Veteran Avenue
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The aim of this project is to validate the use of cell cultures from nervous tissue, liver and muscle on fast, easy, quantitative and reliable test systems to evaluate the potential teratogenic and mutagenic effects of trace heavy metals and carcinogenic hydrocarbons released during the combustion of fossil fuels. We are specifically studying:

a) The effect of lead and cadmium on general growth parameters of several cell types.

b) The effect of lead and cadmium on the developmental expression of differentiated functions in liver, brain and muscle cell cultures.

c) The induction of cadmium binding protein or metalothionin in cultured liver cells.

d) The establishment of lead resistant cell lines and the mechanism for this resistance.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
Medical School

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct 21, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
5

PROJECT OFFICER
Dr. Dean R. Parkar

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000	76			July 1976

*Funds approximate not for citation.66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BAU

TITLE OF PROJECT Effects of Chemical Toxicants Associated with the Production and Consumption of Fuel on the Physiology and Pathophysiology of Phagocytic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John L. Skosey, M.D., Ph.D.
Associate Professor of Medicine and
The Franklin McLean Memorial Research Institute
The University of Chicago, Box 420

950 E. 59th Street
Chicago, Illinois 60637
(312) 947-5062

NAME AND ADDRESS OF APPLICANT INSTITUTION
The University of Chicago
Office of Sponsored Programs

5801 So. Ellis
Chicago, Illinois 60637

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is a three fold rationale for studying the effects of chemical toxicants on the function of phagocytic cells. Firstly, chemical toxicants may interfere with the function of phagocytic cells in defenses against external agents such as bacteria and viruses. Secondly, pathological effects of certain toxicants such as silica and asbestos particles may be mediated through their effects on phagocytic cells. Thirdly, phagocytic cells mediate the pathological consequences which result from agents responsible for, e.g., rheumatic diseases; chemical toxicants may alter responses of phagocytic cells to these agents and to their adverse effects.

Studies designed to elucidate the mechanism by which phagocytic cells may mediate the pathological effects of particles (e.g. silica, asbestos, quartz, carbon) are in progress. We have shown previously that neutrophils respond to monosodium urate crystals coated with immunoglobulin by releasing lysosomal enzymes. This secretion of enzymes occurs without significant cell death. Studies are in progress to determine if other particles which initiate inflammatory tissue damage similarly interact with immunoglobulin and to determine the effects of such immunoglobulin coated particles upon neutrophils. In parallel, studies are in progress to determine the effects of pollutant gasses upon physiological and pathophysiological responses of neutrophils and to determine the mechanisms of these effects. Initial studies have demonstrated that the responses of neutrophils are dependent upon the oxygen tension of the medium used for incubation. Reduction in oxygen tension results in increased release of lysosomal enzymes in response to phagocytable particles, an increased rate of anaerobic glycolysis (reflected in increased lactate production) and a decreased rate of glucose oxidation. Studies are in progress to determine the mechanism of these effects of altered oxygen tension.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) The University of Chicago, Div. of Biological Sciences & Pritzker School of Medicine

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE 10-28-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4

PROJECT OFFICER M. L. Minthorn

RESPONSIBLE ORGANIZATION ERDA

FUNDS OBLIGATED $50,000 Carry-Over

F.Y. 75

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 5/1/75

ESTIMATED COMPLETION DATE 7/1/80

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D6-E681-BAU

TITLE OF PROJECT

Effects of Environmental Pollutants on the Development of the Immune Response

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Bernard N. Jaroslow, Immunologist, Division of Biological & Medical Research
Katherine M. Suhrbier, Scientific Assistant, Division of Biological & Medical Research
Suzanne S. Dornfeld, Scientific Assistant, Division of Biological & Medical Research

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We are studying the short- and long-term effects of important carcinogenic, environmental pollutants on the immune response of mice. The test carcinogens will be given as single injections at 3 doses in relation to their carcinogenicity--the 100%, the 50%, and the 10% carcinogenic doses. In addition, we will assess the effects of the agent when it is given daily at levels equivalent to those of an individual at risk in the industrial environment. Mice will be treated at different ages and their immune response will be assayed from a few days to two years after exposure to the carcinogen. Immunologic competence will be assessed by measures of antibody-forming capacity and by measures of cell-mediated immunity, both in vivo and in vitro. A comparison of the effects of large doses of methylcholanthrene (250-1000 μg/mouse) on production of antibody-forming cells and on production of specifically cytotoxic cells shows that the antibody response is more sensitive to drug inhibition than the cell-mediated response.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Bernard N. Jaroslow, Ph.D.	DATE October 27, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
- ☐ AGENCY STAFF *(Intramural)*
- ☒ NEGOTIATED CONTRACT
- ☐ RESEARCH GRANT

TASK NO.: 6

PROJECT OFFICER: Warren R. Sinclair

RESPONSIBLE ORGANIZATION: ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 134 K Energy 52 K (Carry-Over)	75		1/76	7/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SP...

EPA-IAG-D6-E772-BCO

TITLE OF PROJECT

Computer In Vivo Detection of Mutations in Somatic and Germinal Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

PROJECT OFFICER: H. V. Malling, Head, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(a) Somatic mutations in vivo

The purpose of this investigation is to develop methods by which the frequency of somatic point mutations at several genetic loci in experimental animals and human beings can be measured. Because blood is a readily available source of somatic cells that have a high turnover rate, we will initially attempt our studies with the use of blood. Methods based on differential staining of mutated and non-mutated cells will be developed. Antibodies flagged with fluorescent moieties will be produced to identify cells containing aberrant mutant proteins.

This system will utilize automatic detection of variant cells by a cytograph and the data will be stored and analyzed with the computer.

(b) Point mutations in male germinal tissue

The purpose of this investigation is to develop methods by which point mutations can be detected directly on spermatogonia, spermatid and sperm. The mutant cells will be detected by differential histochemical stains. Several enzyme systems will be employed, some common for somatic cells and the germinal tissue, some specific for the sperm.

Detection of aberrant sperm cells will involve the use of an automatic scanning microscope which will be hooked into the computer.

Task: ERR 1.3

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	H.V. Malling	8/3/76

DO NOT WRITE BELOW THIS LINE - FOR OFFICE USE ONLY

SUPPORTING AGENCY

NIEHS/Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT (Check one)

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.		NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
0	76			1977

PHS-1975 (FORMERLY PHS-166)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of a System for Detecting Lethal Mutations in Mice

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Contractor's Project Director: Thomas H. Roderick, Ph.D., The Jackson Laboratory, Bar Harbor, Maine
Project Officer (NIEHS): William Sheridan, Ph.D., Mammalian Genetics & Cytogenetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor induces chromosome breaks and inversions by means of radiation and/or chemical agents. He mates the treated animals and in the F_1 does cytological analysis of one testis of each individual male. If a significant increase in anaphase bridges appears this is taken as an indication that the animal may carry an inversion; and he is mated to get offspring for further study. Following cytological and linkage studies to characterize the aberation, decision is made as to the utility of the inversion and appropriate marker genes are introduced into the stock.

The contractor has induced and recovered 31 inversions. Of these, 14 have been thoroughly characterized for linkage and chromosomal morphology. One of the inversions has been successfully utilized in tests to detect induced recessive lethal mutations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR 1.4	PROJECT OFFICER Dr. Fred de Serres RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $50,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E772-BCO

TITLE OF PROJECT
Development of a New Mouse Strain to Maximize Sensitivity of a Point Mutation Assay

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor's Project Director: Thomas H. Roderick, Ph. D., The Jackson Laboratory
Project Officer (NIEHS): Lawrence R. Valcovic, Ph. D., Staff Fellow, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In the present system in our laboratory, nine loci are sampled. Other inbred strains of mice possess enzyme variants which can possibly be incorporated into one of our present strains. This contract seeks to fully identify these additional variants (at least 13) and then by repeated backcrossing to incorporate them into the C57BL/6J genome.

Starch gel electrophoresis is used to determine whether a strain carries an allele that is not found in either the DBA/2J or C57BL/6J strains. When such a variant is found, the strain is backcrossed repeatedly to C57BL/6J for 8-10 generations to develop a new strain which will be homozygous with C57BL/6J. Electrophoresis tests will be performed on progeny in each generation to insure that the allelic differences already present in the C57BL/6J line are maintained.

Several strains carrying new variant alleles have been crossed to the C57BL/6J strain. Most lines have proceeded through the seventh backcross generation with electrophoretic verification of the incorporation of the variant alleles.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	1.5	Dr. Fred de Serres
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$39,433	76			1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange. Not for publication or publication reference.	U. S. Department of HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE **NOTICE OF RESEARCH PROJECT**	PROJECT NO. (DO NOT USE THIS SPACE) **EPA-IAG-D6-E772-BCO**

TITLE OF PROJECT

Amplification of Point Mutation System: Characterization of Mouse Esterases by Isoelectric Focusing

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: Dr. Robert Allen, Medical University of South Carolina, Charleston, South Carolina

PROJECT OFFICER (NIEHS): Dr. L. R. Valcovic, Acting Assistant Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – (200 words or less – Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The research seeks to characterize esterases of C57BL/6J and DBA/2J mice with gel isoelectric focusing. Esterases from plasma, red blood cells and kidney of both strains as well as the F_1 interstrain hybrid shall be subjected to two-dimensional analysis. Discontinuous gel zymograms of these enzymes have been described previously and hence this technique will be used for the first dimension separation. Subsequently, isoelectric focus will then be conducted using thin slab acrylamide gels. Various pH ranges will be employec in order to determine the isoelectric point of each esterase band.

Since the projected use of this technique involves screening large number of mice, this contract should entail a sufficiently large sample to place a reliable confident interval for the isoelectric point of each esterase band.

Task: ERR 1.7

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR LR Valcovic	DATE 8/21/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY **NIEHS/Project Officer: Dr. Fred de Serres**

METHOD OF SUPPORT (Check one)

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
0 76			1977

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E772-BCO

TITLE OF PROJECT
Development of a Polygenic Assay for Induced Point Mutations in Mice

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor's Project Officer: John W. Crenshaw, Jr., Ph.D., Georgia Institute of Technology

Project Officer (NIEHS): Eugene R. Soares, Ph.D., Staff Fellow, Mammalian Genetics and Cytogenetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The scope of this contract is to develop an understanding of the mutagenic effects in mice of some known mutagens, as measured by mean and variance changes in polygenic characters.

The contractor proposes to investigate the cumulative effects of multiple mutagen-induced polygenic mutations on a series of traits on F_1 and F_2 generation progenies descended from mutagenized males of an inbred strain of mice. F_1 and F_2 progeny will be examined for a series of traits including: age of eruption of incisors, mean and variance of body weight at weaning, sex ratio at weaning, serum cholesterol level at weaning, and hematocrit at weaning. The contractor proposes to study at least two different mutagens in two strains of mice.

The first semiannual report indicated that data collection was proceeding as scheduled & statistical analysis of the collected data will begin shortly.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR 1.8

PROJECT OFFICER
Dr Fred de Serres

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED
$70,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-73) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D6-E772-BCO

TITLE OF PROJECT

Detection of Point Mutations in Somatic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: Dr. Peter E. Nute, University of Washington, Seattle Washington

PROJECT OFFICER (NIEHS): Dr. H. V. Malling, Geneticist, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Traingle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this investigation is to develop a simple system to measure point mutations in readily accessible human somatic cells. Antibodies to each of two types of fetal hemoglobin will be produced and used to search for individual mutant cells within a population of cells. Some monospecific antibodies to variant human hemoglobins have been acquired and purified. These antibodies will be used in developing tests for detecting a human mutation rate.

Task: ERR 1.9

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR HV Malling	DATE 8/21/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY

NIEHS/Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y. $85,000 76	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE 1977

Prepared for the Science Information Exchange. Not for publication or publication reference.	U. S. Department of **HEALTH, EDUCATION, AND WELFARE** PUBLIC HEALTH SERVICE **NOTICE OF RESEARCH PROJECT**	PROJECT NO. (DO NOT USE THIS SPACE) **EPA-IAG-D6-E772-BCO**

TITLE OF PROJECT

Development of Faster, More Efficient and Less Costly Methods for Determining Teratogenic Changes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractors's Project Director: Dr. Franklin M. Johnson, Research Triangle Institute

Project Officer (NIEHS): R. E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Mouse and rabbit embryos will be exposed to gaseous coal by products such as SO_x and NO_x during culture in the preimplantation period, and, to sulfur-and nitrogen-containing compounds by intrauterine injection during the postimplantation period of gestation. Subsequent effects on the developmental process will be compared to those noted after exposure to the same test agents by inhalation.

Task: ERR- 1.11

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$50,000 76			1977

NIH-1946 (FORMERLY PHS-166)

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

College of Physicians & Surgeons of Columbia University, Department of Pediatrics
630 West 168th Street, New York, N. Y. 10032

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Arthur D. Bloom, 033-24-3679, Professor, Departments of Pediatrics and of Human Genetics and Development

Herbert S. Rosenkranz, 096-28-7438, Professor, Department of Microbiology
William T. Speck, 149-30-2147, Instructor, Dept. of Pediatrics; Attending Physician, Babies Hospital
Sherie L. Morrison, 554-60-7614, Assistant Professor, Dept. of Microbiology
Barbara Travis, 118-28-1583, Research Associate, Dept. of Human Genetics & Development
Bezalel Gutter, 106-54-0400, Research Associate, Dept. of Microbiology

TITLE OF PROJECT

Mutagenesis in Cultured Lymphocytes

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

This project involves the development of mammalian lymphoid culture systems to test for the mutagenicity of environmental agents. Compounds which are known mutagens (such as alkylating agents, and frameshift mutagens) will be tested in human and lymphoid cell lines for the induction of mutations at the hypoxanthine-guanine phosphoribosyl transferase and the argininosuccinic acid synthetase loci, and in murine lymphoid cells for the induction of altered immunoglobulin. The induction of chromosomal breakage in these cell lines will be studied using the G and H banding techniques. In addition, the research will utilize bacterial test systems to determine the relationship between mutagenicity in simpler organisms and in more complex, differentiated mammalian cells.

Task: ERR - 1.13

LEAVE BLANK

Agency: NIEHS
Funding: $199,000 - 76
Project Officer: Dr. Fred de Serres
Est. Completion Date: 1977

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D6-E772-BCO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Texas System Cancer Center, M. D. Anderson Hospital & Tumor Institute
Houston, Texas 77025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Michael J. Siciliano, Department of Biology, M. D. Anderson Hospital & Tumor Institute. Principal Investigator, Assistant Professor and Assistant Biologist. 467-30-5509.

Ronald M. Humphrey, Department of Physics, M. D. Anderson Hospital & Tumor Institute, Co-Investigator, Chief Section of Cellular Studies, Dept. of Physics. 460-44-5590

T. C. Hsu, Department of Biology, M. D. Anderson Hospital & Tumor Institute, Co-Investigator, Chief Section of Cell Biology. 467-60-6146

TITLE OF PROJECT

MULTIPLE LOCI SCREEN FOR MUTATIONS IN MAMMALIAN CELLS

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is our intention to develop a new system for testing the mutagenic potential of various environmental agents on mammalian somatic cells. The basis of the procedure is to expose cells to mutagen and plate out single cell clones. Clonal isolates, after being grown up to 40×10^6 cells, are then screened for electrophoretic variation of the products of over 40 genetic loci. Where a clonal variant is detected, it is isolated and its heritability determined by subcloning and subsequent electrophoresis. The procedure avoids many of the problems associated with the detection on selective systems of recessive mutations (auxotrophic, drug resistant, and temperature sensative) in diploid mammalian cells since electrophoretic mutations are co-dominant. Lack of enrichment for mutants by selection is also compensated for by the increased probability of obtaining an electrophoretic shift in a protein as the result of a single nucleotide substitution in its gene as opposed to the complete loss of function by such an event and, the study of the products of a large number of loci. Additional attributes of the procedure are that: each variant may be associated with a specific genetic locus, mutations in a wide range of genetic loci may be studied, the system requires no change in the medium limiting the cause of any observed variation to intracellular events, and mutations in both structural genes as well as those affecting gene expression can be specifically detected.

Our preliminary studies using Chinese hamster ovary cells (CHO) have revealed that we can electrophoretically characterize the products of 51 structural enzyme loci and detect variants at both structural and control loci. We wish to continue these studies in order to optimize various parameters of the procedure -- dosage of mutagen, time of cloning and stage of the cell cycle for mutagen treatment -- and to use the system to study mutation frequencies under a variety of conditions.

LEAVE BLANK

Task: ERR - 1.14
Agency: NIEHS
Funding: $90,000 - 76
Project Officer: Dr. Fred de Serres
Est. Completion Date: 1977

SECTION 1

NOT FOR PUBLICATION OR PUBLICATION REFERENCE	DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE RESEARCH OBJECTIVES	LEAVE BLANK PROJECT NUMBER EPA-IAG-D6-E772-BCO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, California 94025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

A. D. Mitchell (459-62-8786) Principal Investigator, Cell Biologist, Biomedical Research Department

K. Stefos (452-68-7179) Postdoctoral Fellow in Cell Biology, Biomedical Research Department

M. V. McMacken (583-09-4277) Biochemist, Biomedical Research Department

TITLE OF PROJECT
Development of DNA Repair for Monitoring Human Health

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The nation's response to the needs for energy self-sufficiency could increase the number of hazardous agents that are released into man's daily environment. Efficient and economical systems are needed to predict human susceptibility to hazardous agents and to monitor human populations for adverse genetic effects which may be caused by unforseen mutagens. There is a high probability that these needs could be met by further development of DNA repair synthesis. The utility of the present in vitro DNA repair synthesis tests can be enhanced by developing in vivo DNA repair synthesis to measure organ and tissue specificities of responses to hazardous agents and by using these same tissues as the sources of metabolic activation enzymes for in vitro DNA repair synthesis assays. The significance of DNA repair synthesis will be further enhanced by examinations of DNA repair in prematurely condensed chromosomes and by correlations of the extent of DNA repair with measurements of cytogenetic aberrations, with mutagenesis of mammalian cells, and with carcinogenesis as measured by cell transformation.

LEAVE BLANK

Task: ERR-1.15
Agency: NIEHS
Funding: $80,000 - 76
Project Officer: Dr. Fred de Serres
Est. Completion Date: 1977

SECTION 1

DEPAR ENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

New York State Dept. of Health, 84 Holland Ave., Albany, N.Y. 12237 and
Health Research, Inc., Roswell Park Div. 666 Elm St., Buffalo, N.Y. 14263

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Chester C. Huang (127-34-3846) Principal Investigator, Senior Cancer Research Scientist, Springville Laboratories.

TITLE OF PROJECT

A Modified Host-Mediated Assay Using Human Cells

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The purpose of this proposal is to develop a modified host-mediated assay system by using cultured human lymphoid cells as target cells for screening chemical mutagens and carcinogens. Induction of chromosome damage will be used as an indicator of possible mutagenicity or carcinogenicity of a given compound. First, the growth and cytogenetic characteristics of several selected human lymphoid cell lines will be studied in vitro and after inoculation of such cells in heterologous hosts, second, effects on chromosomes of human lymphoid cells in host by several known mutagens and carcinogens will be tested in this modified host-mediated system and third, the mutagenicity and carcinogenicity of several pesticides in common use will be evaluated by using the modified host-mediated assay developed.

[redacted]

LEAVE BLANK

Task: ERR - 1.16
Agency: NIEHS
Funding: $42,000 - 76
Project Officer: Dr. Fred de Serres
Est. Completion Date: 1977

NIH 398 (FORMERLY PHS 398)
Rev. 1/73

PAGE 2

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. (*Do not use this space*)

SSIE

EPA
EPA-IAG-D6-E772-BCO

TITLE OF PROJECT
Developmental Toxicology Indicators

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Robert L. Dixon, Ph.D., Chief, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, N.C., 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The human population now has a lifetime exposure to an increasingly large number of chemicals with incompletely defined biological activity. Among the least adequately understood characteristics of many of these chemicals is their potential toxicity to man at his most vulnerable stage of development-conception to birth. While the more immediate transplacental effects such as abortion or teratogenic changes are relatively well studied among these agents, the often more insidious and potentially more harmful lifetime effects have received little attention. The great difficulty in correctly ascribing gestational origin to lesions in the human population which are subtle or do not become apparent until later in life makes laboratory and epidemiological investigations in this area essential. Ongoing studies seek to determine the postnatal lifetime toxic effects in rats of totigestational exposure to selected environmental agents.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (*Medical, dental, etc.*)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (*Check one*) ☐ AGENCY STAFF (*Intramural*) ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR 1.17	PROJECT OFFICER Dr. Fred de Serres RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $150,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D6-E772-BCP

TITLE OF PROJECT

ERR 2.1 Metabolism and disposition of selected radiolabelled hydrocarbons and some of their chemically reactive epoxides by the isolated, perfused rabbit lung and by solubilized, reconstituted pulmonary biotransformation systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

J. R. Bend, Ph.D., Visiting Associate, Pharmacology Branch
R. M. Philpot, Ph.D., Senior Staff Fellow, Pharmacology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – (200 words or less – Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the biosciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The metabolism of pure, radiolabelled unsaturated hydrocarbons of different types (aliphatic, alicyclic and polycyclic aromatic) and of their epoxides will be studied in the isolated, perfused rabbit lung and in the isolated, perfused rat liver. Major metabolites will be identified and quantitated; the relative importance of epoxide hydrase and glutathione S-epoxidetransferases as deactivation pathways for the chemically-reactive epoxides will be assessed. Covalent binding, if present, will be quantitated in both liver and lung homogenates. The effect of glutathione depletion on this covalent binding will also be measured.

Task: ERR-2.1

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John R. Bend	8.18.75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Dr. Robert L. Dixon

METHOD OF SUPPORT (Check one)
☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$120,000 76			1977

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCP

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27514

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Lorcan A. O'Tuama, M.D., 385-54-9164, Ass't. Prof. of Medicine (Neurology) and Pediatrics
and Research Scientist, Biological Sciences Research Center
John T. Gatzy, Ph.D., 159-30-3973, Assoc. Prof. of Pharmacology
C.S. Kim, 400-72-1617, Graduate Assistant, Pharmacology

TITLE OF PROJECT

Regulation of Neural Distribution of Lead

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Factors regulating the entry and distribution of inorganic lead in the nervous system will be studied under control and selected abnormal conditions. In the guinea pig, in vivo CSF perfusion will quantitate the disappearance rate of ^{210}Pb and ^{45}Ca across the blood-CSF barrier. The uptake of ^{210}Pb and ^{45}Ca across the blood-brain barrier will be measured by an indicator dilution technique. These measurements will be correlated with levels of lead and calcium attained in brain, meninges, choroid plexus and ependyma. These indices will be determined for control animals and for animals acutely lead-poisoned. The affinity of the neural tissues for lead and calcium in the absence of an intact barrier will be assessed by measuring in vitro uptake and release of ^{210}Pb and ^{45}Ca. This will be determined under control conditions; after inhibition of general, oxidative and glycolytic metabolism; after changes in medium electrolyte composition and after exposure to reagents that act as ligands. An effort will be made to distinguish solute accumulation due to binding within neural tissue from that due to movement across the tissue using excised bullfrog choroid plexus and meninges which can be mounted as "polar" membranes, allowing direct measurement of transepithelial flux. This parameter will be studied in control and acutely poisoned frogs and contrasted with the results of in vitro uptake and release experiments in the same species. The behavior of ^{109}Cd, a non-neurotoxic metal, will also be observed in several of the above experimental situations, so as to suggest patterns of uptake and distribution that are not correlated with neurotoxicity. These studies will (a) establish how the disordered flow of lead across neural barriers that we have noted in lead encephalopathy contributes to its pathogenesis; (b) allow development of predictive tests for neural toxicity of potential toxins and pollutants by testing their effects on barrier function.

LEAVE BLANK

Task: ERR-2.7
Agency: NIEHS
Funding: $65,000 - 76
Project Officer: Dr. Robert L. Dixon
Est. Completion Date: 1977

PHS-398
Rev. 3-70

PAGE 2

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK
PROJECT NUMBER
EPA-IAG-D6-E772-BCP

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of South Dakota, Vermillion, South Dakota 57069

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Frank O. Brady, 280-40-3462
Assistant Professor
Department of Biochemistry

TITLE OF PROJECT

Function of Metallothionein in Heavy Metal Metabolism

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORD (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The low molecular weight, cysteine rich protein, metallothionein will be studied under a variety of conditions in order to elucidate its function in heavy metal metabolism. Its involvement in the mechanisms of incorporation, metabolism, deposition and turnover of hazardous toxic metals, which are becoming increasingly prevalent in the environment as byproducts associated with various energy related technologies, will be elucidated. Specifically, the focus of these studies will be on the mechanisms of action and sites of localization and transfer of heavy metals in perfused rat lungs, and possibly livers and kidneys, (both *in vivo* and *ex vivo*) and in rats (both adults and neonates). The heavy metals of interest in this study are zinc, copper, cadmium, mercury, nickel, and thallium. Initially, these will be studied individually as a preliminary to more important experiments which will involve the study of interactions of two or more of these metals, e.g., a situation which is more likely to occur under environmental conditions. The goal of these studies is to establish whether metallothionein is functioning in detoxification of toxic heavy metals or has another role in the normal metabolism of essential heavy metals, the presence of toxic heavy metals serving to interfere with these normal processes.

LEAVE BLANK

Task: ERR - 2.8
Agency: NIEHS
Funding: $44,000 - 76
Project Officer: Dr. Robert L. Dixon
Est. Completion Date: 1977

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)
EPA-IAG-D6-E772-BCP

TITLE OF PROJECT

Environmental Teratology Information Center (ETIC)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Robert E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch

Interagency Agreement, Oak Ridge National Laboratories (Contact: John S. Wassom)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

NIEHS is establishing a computerized information system for teratology to meet the need of government agencies and scientists-at-large for knowledge of the teratogenic potential of environmental components. Data on warmblooded animals judged to be useful for determining the teratogenic potential of environmental factors will be extracted in tabular form. Information will be collected from published and unpublished studies, whether the result is positive or negative. On-going studies will also be included.

Task: ERR - 2.9

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R E Staples	August 22, 197

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT (Check one)
☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
0 76			1977

NIH-1946 (FORMERLY PHS-166)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mechanisms of heavy metal toxicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

James S. Woods, Ph.D., Pharmacologist, Environmental Toxicology Branch
Bruce A. Fowler, Ph.D., Senior Staff Fellow, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P. O. Box 12233, Res. Tri. Park,
N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Animals of several species are to be chronically exposed to low levels of selected trace metals of environmental importance. The pretoxic effects of these agents on clinically important metabolic parameters of organ function will be identified & quantitatively assessed. Particular attention will be paid to effects on hematopoiesis and other mitochondrial functions of the liver, kidney and erythropoietic organs of exposed animals Further mechanistic studies and the application of these findings to the design of predictive tests of potential clinical utility will be performed in intramural programs directed by the principal investigators.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR 2.10

PROJECT OFFICER
Dr. Robert L. Dixon

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED
$60,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-73) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E772-BCP

TITLE OF PROJECT
Biological Effects of 60 Hertz Electric Fields

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. A. Marino, Ph.D., Principal Investigator, Orthopedic Research 167-32-4100
R. O. Becker, M.D., Medical Investigator, Orthopedic Research 098-14-7718
J. A. Spadaro, Ph.D., Research Biophysicist, Orthopedic Research 065-34-4594

NAME AND ADDRESS OF APPLICANT INSTITUTION

Research Foundation of SUNY
P. O. Box 7126, Albany, N.Y. 12224

SUNY Upstate Medical Center
750 East Adams St., Syracuse, N. Y. 13210

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

60 hertz electric fields arising from electric power transmission lines are ubiquitously present in the environment. The strength of such fields varies directly with the operation voltage of the transmission line and inversely with distance from the line. Biological effects attributable to low frequency electric field exposure have recently been described, notwithstanding earlier work minimizing the biological significance of such fields. Preliminary results obtained in our laboratory show that a 60 hertz electric field of 150 volts/cm is a biological stressor. That is, field exposure alters normal growth in rats & mice and produces changes in the levels of serum hydroxy-corticosterone and serum proteins. This project involves the systematic study of these phenomena in greater detail.

Presently, the human health hazard associated with exposure to 60 hertz electric fields is known. There have been no systematic studies of such effects and consequently there are no federal or state standards for permissible non-occupationally related exposure. Continuing our initial work, we propose the following experiments to evaluate the biological effects of 60 hertz electric fields at 150 volts/cm:

1. The effect in rats on serum hydroxycorticosterone, triglycerides, total proteins & the effect on growth, tissue structure and food and water consumption.
2. The effect on reproduction in mice.
3. The effect in rabbits of acute & chronic exposure.

The experiments will be repeated as a function of field strength & frequency.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR 2.12

PROJECT OFFICER
Dr. Robert L. Dixon

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$32,000	76			1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)
EPA-IAG-D6-E772-BCQ

TITLE OF PROJECT
ERR-3.2
Respiratory Tract Deposition Models

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Project Director: Otto G. Raabe, Ph. D., Lovelace Foundation for Medical Education and Research

Project Officer: Phillip J. Walsh, Ph. D., NIEHS

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C. 2770

SUMMARY OF PROPOSED WORK—(200 words or less—Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The major objectives are: (1) to construct physical models of the respiratory tract of man and several animal species; (2) to measure deposition of aerosols as small as 0.01 micron diameter in the models; (3) to determine the deposition of selected particle sizes in animals and in man if practical; (4) to develop a theoretical model of deposition in the lung based on the above results; and (5) to evaluate the physical-theoretical model in the field.

Task: ERR 3.2

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. Larry G. Hart

METHOD OF SUPPORT (Check one)
☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	AMOUNT OF FUTURE YEARS' COMMITMENTS ASSUMED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	EXPECTED COMPLETION DATE
$50,000 76			1977

NIH-2 (FORMERLY PHS-) [illegible]
REV. [illegible]

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLA

PROJECT NUMBER
EPA-IAG-D6-E772-BCQ

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Harvard School of Public Health
665 Huntington Avenue, Boston, Mass. 02115

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Mary O. Amdur	013-26-1512	Assoc. Professor of Toxicology	Dept. of Physiology
Dwight W. Underhill	579-50-2490	Assist. Professor of Environ. Health Engineering	Dept. of Physiology

TITLE OF PROJECT

Factor Affecting Irritant Potency of Gases and Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We propose to examine the joint toxic action of sulfur dioxide and ozone. Concentrations used will be in the range of 0.2 - 0.8 ppm of each gas. They will be combined in equal concentration as well as in varying ratios. The criteria of irritant response will be alterations in the respiratory mechanics of guinea pigs. The response to the combination will be compared to previously observed changes produced by sulfuric acid. We also plan to study the uptake of sulfur dioxide by wetted wall tubes with and without the addition of aerosols. We plan to study the solubility and reactivity of sulfur dioxide in solutions of various salts which have been shown to potentiate the biological response.

LEAVE BLANK

Task: ERR-3.3
Agency: NIEHS
Funding: $69,000 - 76
Project Officer: Dr. Larry G. Hart
Est. Completion Date: 1977

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E772-BCQ

TITLE OF PROJECT
Respiratory Tract Deposition of Inhaled Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C.P. Yu, Professor, Dept. of Engineering Science, Aerospace Engineering & Nuclear Eng.
D.B. Taulbee, Associate Professor, " " " " "
Two Research Assistants (to be determined)

NAME AND ADDRESS OF APPLICANT INSTITUTION

State University of New York at Buffalo

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Mathematical models are to be developed for theoretical prediction of particle deposition and distribution along the respiratory tract system. Specifically, the following tasks are to be undertaken during the period of requested support:

1. Develop a mathematical model for deposition in man at nose-breathing.
2. Recommend figures for the regional deposition in the human lung at nose and mouth-breathing under various working conditions. Emphasis will be given to fine particles which are difficult to be removed from power plant emissions.
3. Develop a mathematical model for deposition in smokers and patients with chronic obstructive pulmonary disease.
4. Develop a mathematical model for deposition in experimental animals.

The basic method to be used in the one previously developed by the principal investigator and his faculty associate.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR 3.4	PROJECT OFFICER Dr. Larry G. Hart RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $49,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0051*
	PROJECT NO. (*Do not use this space*) SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E772-BCQ

TITLE OF PROJECT

Compartmental Models for Body Burden of Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Allan H. Marcus, Associate Professor, Dept. of Mathematics (R. I.)

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Maryland - Baltimore County, Division of Mathematics & Physics
5401 Wilkens Avenue, Catonsville, Maryland 21228

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is often possible to model the body burden of pollutants as a mixed exponent moving average of the external pollutant dosage. This model fails: (a) when the pollutant occupies a significant fraction of a system e.g. carbon monoxide. (b) when an appreciable fraction of pollutant is retained in long-lived components e.g. bone-seekers such as lead. A semi-Markov model for physiological kinetics generalizes this model. By representing body burden as a stochastic integral of external dosage, it is often possible to estimate the frequency, duration, and parameters of other integral exceedance measures for body burden, thus to estimate the effects of environmental quality standards on body burden variation. Physiological kinetic models for carbon monoxide, for the lead-calcium system, and for cadmium-zinc, will be estimated using non-linear regression techniques for experiments (as reported in the literature) on uptake and elimination in constant evironments. Stochastic models will be developed for external dosage of CO and lead, and the parameters of the exceedance measures of body burden estimated. In this way it may prove possible to establish a better rationale for environmental standards setting.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (*Medical, dental, etc.*)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (*Check one*) ☐ AGENCY STAFF (*Intramural*) ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR-3.5	PROJECT OFFICER Dr. Larry G. Hart RESPONSIBLE ORGANIZATION NIEHS	
FUNDS OBLIGATED $24,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCQ

TITLE OF PROJECT
Trace Element Deposition in Ambient Aerosol Inhalation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Winchester, John W. SS no. 322-22-5851, Professor & Chairman, Dept. of Oceanography, Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

Florida State University, Tallahassee, Florida 32306

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The response to inhalation of ambient aerosol particles from indoor and selected outdoor environments will be investigated using high sensitivity elemental analysis by proton induced X-ray emission, PIXE. The response may include both deposition of particles in the respiratory trace and growth in particle size due to exposure to high relative humidity during breathing. Both responses may depend on particle size and on chemical composition of the particles and may be different for different component particles in a mixed aerosol. The different components may be distinguished by their different elemental composition, and the respiratory response of each may be determined in a single experiment.

Samples will be taken by 5 stage cascade impactor with fine particle filter and will provide resolution of particles <0.25 to >4 mm equivalent aerodynamic diameter. Each size range is analyzed for its elemental constituents by PIXE, including S, Cl, K, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Br, Pb, Zr, Cd, and additional heavy metals if present in the aerosol. The nanogram sensitivity of the PIXE technique permits fine particle size resolution at a sampling rate of 1 liter/minute and requires of human subjects only 10 minutes or less of breathing time per sample. Experiments are carried out using ambient aerosol from different actual environments and do not require the use of special tracer materials. A major objective of the research will be to standardize experimental conditions and develop a compact & portable sampling unit which can be used in more specialized medical tests of inhalation response to pollution aerosol particles.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR 3.6	PROJECT OFFICER Dr. Larry G. Hart RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$55,700	76			1977

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Regional Deposition of Inhaled Particles in Man

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Morton Lippmann, Ph.D., Medicine, Associate Professor, Dept. of Environmental Medicine
Roy E. Albert, M.D., Professor, Dept. of Environmental Medicine
Richard B. Schlesinger, Associate Research Scientist, Dept. of Environmental Medicine
Donovan B. Yeates, Ph.D. & Tai L. Chan, Research Scientists, Dept. of Environ. Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION
New York University Medical Center
550 First Avenue, New York, New York 10016

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research program is to develop & refine realistic predictive models for particle deposition efficiencies & patterns in the human tracheobronchial tree. The models will cover respirable particles of all sizes, a wide range of constant & cyclic respiratory flows, and be applicable to population subgroups as well as averages. They will be based upon available data from studies on humans in-vivo, and available data & new data on the distribution of deposition in hollow bronchial casts. The new studies will be performed using γ-tagged monodisperse aerosols, twelve new bronchial casts which extend to 2 mm airways, new replicate large airway casts, new multiple lobule casts of airways < 2 mm, and appropriate collimated scintillation detectors. A variable orifice larynx model will be constructed for the deposition studies with cyclic flows. High resolution surface density measurements will be made by counting the numbers of particles on bifurcations and other selected cast surfaces with a scanning electron microscope. These measurements will establish concentration factors and identify locations for the cells with the highest exposures to inhaled particles, thereby providing a basis for the deposition components of an airway surface dosimetry model related to human bronchial cancer risk.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR 3.7

PROJECT OFFICER
Dr. Larry G. Hart

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED
$67,763

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. *(Do not use this space)*
SSIE
EPA EPA-IAG-D6-E772-BCQ

TITLE OF PROJECT Development of NMR Spectroscopic Methods for Characterizing Specific Binding (Electronic &Covalent Bonding) Modes of Organics & Inorganics Associated with Non-Nuclear Energy Technologies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. J.D. McKinney, Supervisory Research Chemist, EPCB, NIEHS; Dr. P.W. Albro, Research Chemist, EBCB,- NIEHS; Dr. R. Cox, Visiting Scientist, Dept. of Chemistry, University of Georgia

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: To isolate & identify on a molecular level the specific binding site(s) in body tissue and fluid for the highly toxic isomers in the chlorinated biphenyl, dioxin, and furan classes and compare with selected members of the polynuclear aromatic hydrocarbon classes and other related planar molecules; to study metabolic activation using selected non-radioactive labeled 13C-benzo(a)pyrene derivatives and fluorinated isosteres of selected compounds as mechanistic probes; and to explore the usefulness of selected metal nuclei as nuclear magnetic resonance (NMR) probes for the sites and nature of their binding interaction in body fluids and tissues.

(2) Approach: High resolution multi nuclei NMR using specifically labeled (^{13}C, F^{19}, 2H, et. compounds where possible will be used as the primary tool for studying these complex molecule interactions of biological significance.

(3) Current Plans: The initial plans are to develop a multi-nuclei NMR capability and determine the advantages and disadvantages of various nuclei as mechanistic probes The early work will use various purified biopolymers and their monomers as models and would proceed to various intracellular organelles isolated from biological systems.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	ERR 3.8	Dr. Larry G. Hart
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	76			1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E772-BCR

TITLE OF PROJECT
Effects of energy-related pollutants on female reporductive tract function

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

George W. Lucier, Ph.D., Research Chemist, Environmental Toxicology Branch; John A. McLachlan, Ph.D., Developmental Toxicologist, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, NC 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This contract was awarded in March 1976 to Endorrine Laboratories of Madison, Wisconsin. We are proposing to study the effects of exposure of pregnant animals to energy-related pollutants on male and female reproductive tract function in F_1 offspring. Forced breeding and serial mating techniques will be used to evaluate fertility. Endocrinology and histopathology parameters will be studied in reproductively abnormal animals. Screening procedures will be done on contract and further mechanistic studies will be attempted in intramural laboratories. Chemicals under investigation will include the PCBs, PBBs, Zeranol, and TCDD.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	**SIGNATURE OF PRINCIPAL INVESTIGATOR**	**DATE** 10/20/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	**TASK NO.** ERR-4.3	**PROJECT OFFICER** Dr. Robert L. Dixon **RESPONSIBLE ORGANIZATION** NIEHS

FUNDS OBLIGATED $100,000	**F.Y.** 76	**NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.**	**STARTING DATE**	**ESTIMATED COMPLETION DATE** 1977

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCR

TITLE OF PROJECT
Effects of 60 Hz fields on the mammalian central ner vous system

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Donald I. McRee, Ph.D., Mechanical Engineer, Environmental Biophysics Branch
W. Ross Adey, M.D., Professor, Anatomy and Physiology, Director of Space Biological Laboratory, Brain Research Institute, UCLA (Contractor); S.M. Bawin, Ph.D., Space Biological Lab., UCLA (Contractor); R. Gavalas-Medici, Ph., D., Space Biological Lab. UCLA

NAME AND ADDRESS OF APPLICANT INSTITUTION
Nat'l Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park,
N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objective, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research project is to determine the effects of 60 Hz fields from high voltage transmission lines on the central nervous system of mammals.

Specific studies to be accomplished include:

1. Effects on biorhythms in rats based on general activity measurements.
2. Effects on urinary metabolites and their correlation with biorhythms
3. Effects on $^{45}Ca^{2+}$ efflux from intact cat cerebral cortex.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR
Donald F. McRee

DATE
10/20/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR 4.4

PROJECT OFFICER
Dr. Robert L. Dixon

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED
$100,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange. Not for publication or publication reference.	U. S. Department of HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE **NOTICE OF RESEARCH PROJECT**	PROJECT NO. (DO NOT USE THIS SPACE) **EPA-IAG-D6-E772-BCR**

TITLE OF PROJECT

ERR 4.5 Respiratory and cardiovascular functions in pollutant exposed animals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

E. W. Van Stee, D.V.M., Physiologist, Environmental Biology and Chemistry Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK — (200 words or less — Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the biosciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A semiautomated method has been developed for the determination of P-R and S-T intervals, QRS duration, and heart rate. A digital processing oscilloscope is used in conjunction with a programmable electronic calculator. The user scans ECGs previously recorded on FM tape. Visually identified waveforms are held in the display by a single keystroke. Cursors are then placed on the waveform with additional keystrokes. Program execution [illegible]

Task: ERR-4.5

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 10-20-76

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY

NIEHS/Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT (Check one)

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.		NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$75,000	76			1977

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D6-E772-BCR

TITLE OF PROJECT

ERR 4.6 Effects of gestational exposure

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Robert E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch
B. A. Schwetz, D.V.M., Ph.D., Dow Chemical Company (Contractor)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P.O Box 12233, Res. Tri. Park, NC 27709

SUMMARY OF PROPOSED WORK — (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the field and made available to investigators who request such information. Your summary is to be used for these purposes.

Pregnant mice and rabbits are being exposed in inhalation chambers to sulfur dioxide, nitric oxide, carbon monoxide or various particulates, and to sulfuric acid aerosol to determine the effect of these pollutants on development of the conceptus. The offspring are examined just before birth for the presence of external and internal structural alterations.

Task: ERR-4.6

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R E Staples	10-20-76

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY **NIEHS/Project Officer: Dr. Robert L. Dixon**

TYPE OF PROJECT (Check one)

☐ [illegible] Staff [illegible]   ☐ Negotiated Contract   ☐ Special Project Grant   ☐ Research Grant   ☐ Other (Specify)

[illegible]	F.Y.	[illegible] ASSURED	[illegible] DATE	[illegible]
$100,000	76			1977

[illegible]
REV. 7-72

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK
PROJECT NUMBER
EPA-IAG-D6-E772-BCR

NAME AND ADDRESS OF APPLICANT ORGANIZATION
New York University Medical Center
550 First Avenue, New York, New York 10016

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Bernard D. Goldstein, M.D., SS# 107-30-3693 - Assistant Professor of Environmental Medicine and Medicine

Walter Troll, Ph.D. , SS# 346-12-4757 - Professor of Environmental Medicine

Toby Rossman, Ph.D., SS# 119-34-7549 - Assistant Professor of Environmental Medicine

TITLE OF PROJECT
Arsine Toxicity: A Potential Environmental Hazard

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The proposed studies will evaluate the toxicity of arsine, a potential by-product of coal gasification technology, in two experimental systems.

1. Human red cells will be exposed to arsine in vitro in order to determine the mechanism of action of this hemolytic gas. In particular, the possibility that arsine hemolyzes the red cell through production of free radicals or peroxides will be assessed.

2. The possible carcinogenic potential of arsine will be indirectly studied in E. Coli and mammalian tissue culture cell lines by evaluating whether asine interferes with DNA repair processes as has been observed with its presumed end product arsenite.

In each of these studies the levels of intracellular and extracellular arsenic compounds following arsine exposure will be measured and the results compared with parallel experiments using similar levels of arsenite or, if indicated, arsenate.

Task: ERR-4.7

LEAVE BLANK

Agency: NIEHS
Funding: $53,000 - 76
Project Officer: Dr. Robert L. Dixon
Est. Completion Date: 1977

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCR

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford University Stanford, California 94305

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

S. David Holtzman, M.D., Ph.D.
329-34-6056
Assistant Professor, Pediatrics and Neurology
Head, Division of Pediatric Neurology

TITLE OF PROJECT

Lead toxicity and energy metabolism in immature brain

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Lead is a ubiquitous toxic pollutant. The most serious manifestation of pediatric lead poisoning is an acute encephalopathy. In addition, the rising burden of environmental lead may be producing significant brain damage, without overt encephalopathy, in young children, in the unborn fetus, and the neonate. Pathologic studies suggest that lead produces edema and capillary changes at a "critical" time in the immature brain of the human and in a rat model of lead encephalopathy. This "critical" period in the rat contains many age-dependent changes in energy metabolism including activities of the electron transport chain (ETC) as described by this investigator and others. Lead does act on the ETC in other tissues. However, there are no studies in immature brain of lead effects on the ETC, a probable basic step in the pathogenesis of lead encephalopathy.

Preliminary results are presented on effects of lead on oxidative phosphorylation in immature rat brain mitochondria. Within 2 days of feeding lead to 2 week old animals, respiration with NAD-linked substrates is uncoupled, reflecting an increased state 4 rate. During the subsequent 2 week pre-encephalitic period of lead feedings, both state 3 and 4 rates become increasingly depressed. Cytochrome oxidase activity shows the same changes. These effects are more significant in cerebellar than in cerebral hemisphere mitochondria. Importantly, these effects of lead occur earlier than previously reported changes in brain fluid, electrolytes, and morphology.

Considering the preliminary results and observations outlined above, investigations are proposed based on these hypotheses: a) the primary effect of lead in developing brain is on energy metabolism; specifically on sites in the ETC; and b) this effect is basic to the toxic effects of lead. Experiments are designed to delineate the sites and mechanisms of action of lead to learn more of the properties of the ETC in immature brain and of the pathogenesis of lead encephalopathy. Younger animals will be studied to delineate potential effects of lead on the brain of the human fetus and neonate.

LEAVE BLANK

Task: ERR-4.8
Agency: NIEHS
Funding: $62,000 - 76
Project Officer: Dr. Robert L. Dixon
Est. Completion Date: 1977

PHS-398
Rev. 3-70

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D6-E772-BCR

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California, Department of Chemistry, Davis, California 95616

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

August H. Maki	078-22-4549	Professor	Chemistry
Steve Siegel	013-38-7607	Research Assistant	Chemistry
Tiao-te Co	256-96-6936	Research Assistant	Chemistry
- -		Postdoctoral Fellow	Chemistry

TITLE OF PROJECT

Binding of CH_3Hg^+, an Environmental Hazard, with DNA

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We intend to determine the extent to which DNA of chromosomes binds alkyl and aryl mercury in living cells. Also, we wish to obtain information on the molecular level concerning the nature of the complexes. The method to be used is a spectroscopic one, optical detection of magnetic resonance, odmr, by means of which magnetic resonance transitions in photoexcited triplet states are detected optically. A heavy atom effect caused by mercury binding to an aromatic chromophore such as a heterocyclic base of DNA makes the resulting triplet state a highly radiative trap which is especially sensitive to odmr. The odmr method thus selects the mercury-perturbed chromophore which then can be identified by the magnetic resonance frequencies, and other properties of the phosphorescent state. Selectivity by the heavy atom effect is especially good in DNA which normally is not highly luminescent. As a major system for study, we intend to use Allium cepa for which cytologital data of chromosomal aberrations of root cells caused by mercurial treatment exists.

LEAVE BLANK

Task: ERR-4.9
Agency: NIEHS
Funding: $44,000 - 76
Project Officer: Dr. Robert L. Dixon
Est. Completion Date: 1977

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E772-BCR

TITLE OF PROJECT
Effects of energy-related pollutants on behavior

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Clifford L. Mitchell, Pharmacologist, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Nat'l Institute of Environmental Health Sciences, P. O. Box 12233, Res. Tri. Park, N.C.
27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We are proposing to study the effects of energy-related pollutants on male and female behavior in the rat. An important function of this project will be to focus attention on a relatively neglected area of health effects of the energy crisis, namely, the toxicity of pollutants for the nervous system and the resultant changes in behavior patterns. A major part of this project will be to look at a spectrum of behavioral and neurotoxicity tests for heir reliability and validity in detecting low level, chronic effects of known and unknown eurotoxins. Special attention will be paid to heavy metals and interactions of these with ydrocarbons, especially in the developing animal where the behavioral and neurologic patterns are being laid down and thus represent systems likely to be most susceptible to ffects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Clifford L. Mitchell

DATE
10/20/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR-4.10

PROJECT OFFICER
Dr. Robert L. Dixon

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED
$150, 000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E772-BCS

TITLE OF PROJECT Chemical and Environmental Mutagen Studies Utilizing the Tradescantia Test System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor'.s Project Director: Arnold H. Sparrow, Ph.D., Brookhaven Nat'l Lab.; Project Officer (NIEHS): Frederick J. de Serres, Ph. D., Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Nat'l Institute of Environmental Health Sciences, P. O. Box 12233, Res. Tri. Park, N.C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Refinements in Chemical mutagen exposure techniques were made to establish 1, 3-dibromoethanol (DBE) as the mutagen standard in these studies rather than ethylmethane sulfenate (EMS) and this work has continued using tritium labeled DBL. Plant breeding and new clone selection has also been continued to obtain more sensitive clones which might provide better indicators of weak mutagens and chronic levels of exposure. New clones with a wider range of spontaneous mutation rates at each of three loci are being used along with existing mutable clones to develop methods for studying repair.

Additional exposures of longer duration have been made with DBE; dose response curves from exposures of concentrations of 2 to 100 ppm for 2 to 144 hours exposure show that straight line relationships on a log-log plot with slopes of about 2. Furthermore, the concept of time X concentration plotted against mutation frequency also shows a straight line relationship on a log-log plot for all exposures, from 2 hours to 144 hours.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Internal)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. ERR-5.1

PROJECT OFFICER Dr. Fred de Serres

RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $180, 000

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E772-BCS

TITLE OF PROJECT Compilation and Tabular Abstracting of Literature on Mutagenic Effects of Energy Related Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor's Project Director: John S. Wassom, Oak Ridge National Laboratory, Oak Ridge, Tennessee

Project Officer (NIEHS): Dr. H. V, Malling, Head, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P. O. Box 12233,
Res. Tri. Park, North Carolina, 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The tasks the Environmental Mutagen Information Center will carry out are to compile the past and present literature on mutagenesis testing of energy related pollutants. This information will then be processed into EMIC's data bank noting bibliographic details, and keywording of chemicals, organisms, and systems studied.

Energy Information Files Now Available at EMIC

Petroleum Refinery Stream Effluents - select chemicals from effluents resulting from refinery streams were searched for potential mutagenic activity (and "select" toxicity).

Toxicity of Coal Liquifaction Products - limited search of general publications in "EMIC" shale oil, oil shale, coal conversion, and energy-related files for toxicological information.

Coal conversion files are being maintained and pertinent references are being selected and added for possible interest to our funding agencies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. ERR-5.3	PROJECT OFFICER Dr. Fred de Serres RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $45,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND S-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E772-BCS

TITLE OF PROJECT Electrophoresis of Mouse Tissue: Testing of Offspring After Parental Treatment with Energy Related Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor's Project Director: Dr. F.M. Johnson, Research Triangle Institute, Research Triangle Park, North Carolina
Project Officer (NIEHS): Dr. L. R. Valcovic, Acting Assistant Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P. O. Box 12233,
Res. Tri. Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study of specific enzyme mutations using electrophoresis has the capability of detecting mutations that result in either a non-functional protein or a functional protein with altered electrical charge. Our objective is to develop a single mammalian test system that will detect both electrophoretic mobility (EPM) and inactive enzyme (IAE) mutations in the same loci. Two inbred mouse strains which differ with respect to nine enzyme loci have been selected for this system. Adult males of each strain to produce F3 hybrid offspring. Tissue samples are obtained surgically and electrophoresis is conducted on crude homogenates. While sampling is not yet completed, preliminary data indicates that the system is at least as sensitive in detecting IAE mutations as is the morphological specific locus system. Several mutants have been obtained and currently studies are underway to determine the biochemical nature of the induced mutations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR-5.6

PROJECT OFFICER
Dr. Fred de Serres

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$140,000	76			1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E772-BCS

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Monitoring Mutagens (Clastogens) With Mammalian Chromosomes.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
T.C. Hsu, Biologist and Professor of Biology, Dept. of Biology
Sen Pathal, Assistant Biologist, Dept. of Biology
Frances E. Arrighi, Associate Biologist and Associate Professor Biology, Dept. of Biology

NAME AND ADDRESS OF APPLICANT INSTITUTION
The University of Texas System Cancer Center M. D., Anderson Hospital &
Tumor Institute, 6723 Bertner Avenue, Houston, Texas 77025

SUMMARY OF PROPOSED WORK — (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is an urgent need for devising & standardizing procedures for monitoring the effects of environmental mutagens on the genetic systems of higher animals. For practical purposes, these procedures should be relatively inexpensive, not laborious, easily quantitated, and the test objects should be related to the genetic system of man and other mammals. Chromosomes of cells in culture fulfill all these criteria and should be one of the most suitable testing materials. Since most mutagens induce chromosome damage (hence they are also clastogens), chromosome damage should serve as a conservative indicator of gene damage. However, investigators in the past used various test objects (many were poor materials) and test systems (many haphazardly designed) so their data are incomplete and are not strictly comparable. This project is designed to systematically test several cytologically advantageous materials and to determine the most efficient, economical and information-yielding protocol for future screening of environmental mutagens. Our test materials include, in addition to diploid human fibroblasts, cells of the Chinese hamster (for its fast growth rate and good chromosomes), the Indian muntjac (for its very low diploid number, 2n=6), two species of the deer mice (differing drastically in the amount of constitutive heterochromatin and repetitive DNA content), the laboratory mouse, and several other species. Test compounds will include well-known clastogens, probable clastogens and untested chemicals. The drug experiments will consist of continuous treatments (to determine inhibition of mitosis, stickiness, chromosome orientation, breaks and subsequent aberrations), aberrations in the recovery populations after pulse treatments, frequency of sister chromatid

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE
(over)

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
ERR-5.7

PROJECT OFFICER
Dr. Fred de Serres

RESPONSIBLE ORGANIZATION
NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$112,159	76			1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

SMITHSONIAN SCIENCE INFORMATION EXCHANGE PROJECT NUMBER (Do NOT use this space)	U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE NOTICE OF INTRAMURAL RESEARCH PROJECT	PROJECT NUMBER **EPA-IAG-D6-E772-BCT**

PERIOD COVERED
July 1, 1975 to June 30, 1976

TITLE OF PROJECT (80 characters or less)

ERR-6.1 Risk Assessment for Environmental Carcinogens

NAMES, LABORATORY AND INSTITUTE AFFILIATIONS, AND TITLES OF PRINCIPAL INVESTIGATORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT

PI:	D. G. Hoel	Chief	EBB NIEHS
	H. A. Guess	Staff Fellow	EBB NIEHS
OTHER:	K. S. Crump	Visiting Scientist	EBB NIEHS
	C. H. Langley	Senior Staff Fellow	EMB NIEHS
	P. Y. Chi	Visiting Fellow	EBB NIEHS

COOPERATING UNITS (if any)

Environmental Mutagenesis Branch

LAB/BRANCH
Environmental Biometry Branch

SECTION

INSTITUTE AND LOCATION
NIEHS, NIH, Research Triangle Park, North Carolina 27709

TOTAL MANYEARS: 0.8	PROFESSIONAL: 0.8	OTHER: 0

SUMMARY OF WORK (200 words or less - underline keywords)

The purpose of this project is to develop improved statistical techniques for using data from animal carcinogenicity tests conducted at high dose levels to estimate long term risk from chemical carcinogens at very low dose levels. Existing techniques are evaluated and new techniques are studied, with particular emphasis on those which attempt to relate mechanistically to the carcinogenic process.

Task: **ERR-6.1**
Agency: **NIEHS**
Funding: **$5,000 - 76**
Project Officer: **Dr. David G. Hoel**
Est. Completion Date: **1977**

PHS-6040
(12-75)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D6-E772-BCT

TITLE OF PROJECT

ERR-6.3
Species-To-Species Carcinogenesis Extrapolation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

G. M. Williams, M.D., Principle Investigator
J. H. Weisburger, M.D., Senior Scientist
Hildegard Marquardt, M.D., Scientist/Librarian
Steven Stellman, Ph.D., Head of Biostatistics Section

NAME AND ADDRESS OF APPLICANT INSTITUTION

American Health Foundation
1370 Ave. of the Americas
New York, New York 10019 (To be performed at: Valhalla, N.Y.)

SUMMARY OF PROPOSED WORK – (200 words or less – Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the biosciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The major purpose of this contract is to create a data summary from published studies in the field of carcinogenesis and to utilize this data summary to investigate various aspects of the quantification of species differences following exposure to specified carcinogenic agents. Special attention will be given to issues such as attempting to establish the most apprppriate dose equivalency between species, the dependency of activity on metabolic pathways and metabolic activation/detoxification factors, and [illegible]

Task: ERR-6.3
Agency: NIEHS
Funding: $59,000 - 76
Project Officer: Dr. David G. Hoel
Est. Completion Date: 1977

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY

METHOD OF SUPPORT (Check one)

☐ Agency Staff (Intramural)
☐ Negotiated Contract
☐ Special Project Grant
☐ Research Grant
☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	[illegible]	[illegible] COMPLETION DATE

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D6-E772-BCT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Department of Statistics
367 Evans Hall
University of California
Berkeley, California 94720

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

J. Neyman, 561-46-6637, Director, Statistical Laboratory, Professor of Statistics
L. LeCam, 572-58-5796, Professor of Statistics
E. L. Scott, 559-58-4487, Professor of Statistics
F. N. David, 572-68-5929, Chairman, Department of Statistics, Professor of Statistics
H. Lewy, 220-22-0146, Professor Emeritus of Mathematics

TITLE OF PROJECT

STATISTICAL STUDIES OF PROBLEMS OF HEALTH AND BIOLOGY

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is intended to work on the development of statistical and probabilistic subdisciplines particularly important in the studies of biology and health problems. Whenever possible, such studies will be conducted in conjunction with substantive biological studies. To facilitate the establishment of the relevant contacts, seminar meetings with substantive speakers will be used, once a week during the academic year and more frequently during summer. Many problems contemplated for the immediate future are suggested by the current energy crisis. The broad, say, ultimate statistical problem connected with this crisis can be stated as follows: given that in a locality a new energy producing plant is to be constructed, with a specified additional environmental pollution, to estimate the consequent changes in the selected parameters of public health. It is proposed to study a number of subproblems of this "ultimate" problem. These include: (i) the use of Markov chains to study "competing risks", (ii) methodology of treating factorial experiments, (iii) construction of stochastic models of biological phenomena like carcinogenesis and mutagenesis. Some relevant mathematical problems will also be studied.

LEAVE BLANK

Task: ERR-6.12
Agency: NIEHS
Funding: $76,350
Project Officer: Dr. David G. Hoel
Est. Completion Date: 1977

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D6-E772-BCT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

State University of New York at Buffalo

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

1. C. P. Yu, 540-46-8993, Professor, Department of Engineering Science, Aerospace Engineering and Nuclear Engineering.

2. D. B. Taulbee, 363-36-5370, Associate Professor, Department of Engineering Science, Aerospace Engineering and Nuclear Engineering.

3. Two Research Assistants (to be determined).

TITLE OF PROJECT

Respiratory Tract Deposition of Inhaled Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Mathematical models are to be developed for theoretical prediction of particle deposition and distribution along the respiratory tract system. Specifically, the following tasks are to be undertaken during the period of requested support:

1. Develop a mathematical model for deposition in man at nose-breathing.

2. Recommend figures for the regional deposition in the human lung at nose and mouth-breathing under various working conditions. Emphasis will be given to fine particles which are difficult to be removed from power plant emissions.

3. Develop a mathematical model for deposition in smokers and patients with chronic obstructive pulmonary disease.

4. Develop a mathematical model for deposition in experimental animals.

The basic method to be used is the one previously developed by the principal investigator and his faculty associate.

LEAVE BLANK

Task: ERR-6.13
Agency: NIEHS
Funding: $48,000 - 76
Project Officer: Dr. David G. Hoel
Est. Completion Date: 1977

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

	LEAVE BLANK
	PROJECT NUMBER EPA-IAG-D6-E772-BCT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Maryland - Baltimore County, Division of Mathematics and Physics
5401 Wilkens Avenue, Catonsville, Maryland 21228

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Allan H. Marcus 278-36-6873, Associate Professor, Department of Mathematics (P.I.)

TITLE OF PROJECT

Compartmental Models For Body Burden Of Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is often possible to model the body burden of pollutants as a mixed exponential moving average of the external pollutant dosage. This model fails: (a) when the pollutant occupies a significant fraction of a system e.g. carbon monoxide. (b) when an appreciable fraction of pollutant is retained in long-lived components e.g. bone-seekers such as lead. A semi-Markov model for physiological kinetics generalizes this model. By representing body burden as a stochastic integral of external dosage, it is often possible to estimate the frequency, duration, and parameters of other integral exceedance measures for body burden, thus to estimate the effects of environmental quality standards on body burden variation. Physiological kinetic models for carbon monoxide, for the lead-calcium system, and for cadmium-zinc, will be estimated using non-linear regression techniques for experiments (as reported in the literature) on uptake and elimination in constant evironments. Stochastic models will be developed for external dosage of CO and lead, and the parameters of the exceedance measures of body burden estimated. In this way it may prove possible to establish a better rationale for environmental standards setting.

Task: ERR-6.14
Agency: NIEHS
Funding: $21,000 -76
Project Officer: Dr. David G. Hoel
Est. Completion Date: 1977

LEAVE BLANK

NIH 398 (FORMERLY PHS 398)
Rev. 1/73

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D6-E772-BCT

TITLE OF PROJECT
ERR-6.15
Extrapolation of Polychlorinated Biphenyl Deposition

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

T.E. Eling, Ph. D., Co-Head, Pharmacokinetic Section, Pharmacology Branch
M.W. Anderson, Ph. D., Co-Head, Pharmacokinetic Section, Environmental Biometry Branch
H.B. Matthews, Ph. D., Pharmacokinetic Section, Pharmacology Branch
D. Tuey, Ph. D., Pharmacokinetic Section, Environmental Biometry Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P. O. Box 12233, Res. Tri. Park, N.C. 277

SUMMARY OF PROPOSED WORK – (200 words or less – Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the biosciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We will examine the absorption, distribution, and metabolism of 3 PCB isomers in dogs and monkeys. The data obtained from these disposition studies will be used in the construction of pharmacokinetic models for the purpose of species extrapolation. The contract for the initial disposition studies will be awarded approximately November, 1976.

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. David G. Hoel

METHOD OF SUPPORT (Check one)
☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$140,000 - 76			1977

HEW-1046 (FORMERLY PHS-166)
REV. 6-72

Reproduced from best available copy.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 1?3-R0051

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E772-BCU

TITLE OF PROJECT
Effects of Pollutants Upon Alveolar Macrophages

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
John R. Rowlands, Ph.D. - Director, Environmental Science
Emily M. Gause M.S. - Sr. Res. Scientist, Environmental Science
Martin L. Meltz, Ph. D. - Sr. Res. Scientist, Environmental Science
Bruce McCullough, Ph. D - Staff Pathologist, Environmental Science

NAME AND ADDRESS OF APPLICANT INSTITUTION
Southwest Foundation for Research & Education
P. O. Box 28147 (8848 West Commerce Street)
San Antonio, Texas 78284

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A research study has been designed to: 1) detect directly, by means of spin label measurements, membrane lesions produced from in vivo exposure of alveolar macrophages to pollutant atmospheres - both oxidant and reducing; 2) obtain experimental evidence that these lesions are, or are not, associated with activity of membrane-bound enzymes and with phagocytic and respiratory capacity of the alveolar macrophage; 3) relate dose-dependence of observed induced membrane lesions with response of intracellular systems--specifically lysosomal enzymes, a cytoplasmic enzyme, cAMP, and RNA/DNA synthesis; 4) assess the effects of the same in vivo exposures upon selected lung systems which will either exert a pharmacological effect upon the macrophage membrane (such as cAMP), or provide an altered substrate for phagocytosis by the alveolar macrophage (i.e., the lung surfactant); and 5) evaluate the effects of the metabolic and functional state of the alveolar macrophage itself (i.e., actively phagocytic or resting) upon production of lesions, impairment of function, and particularly upon surrounding lung tissue.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: ERR-7.6
PROJECT OFFICER: Dr. Larry G. Hart
RESPONSIBLE ORGANIZATION: NIEHS
FUNDS OBLIGATED: $91,566
F.Y.: 76
NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.:
STARTING DATE:
ESTIMATED COMPLETION DATE: 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE RESEARCH OBJECTIVES	LEAVE BLANK PROJECT NUMBER **EPA-IAG-D6-E772-BCU**

NAME AND ADDRESS OF APPLICANT ORGANIZATION
Duke University Medical Center, Durham, N.C. 27709

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR
Daniel B. Menzel, 569-46-3298, Assoc. Prof. Pharmacology & Medicine, Head, Div. of Pharmacology, Dept. of Physiology & Pharmacology
Hugo O. Jauregui, 299-49-7680, Ast. Prof. of Pathology, Dept. of Pathology

TITLE OF PROJECT
Can Vit E or Lipid Alter NO_2 or O_3 Toxicity in Lung?

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Ozone and nitrogen dioxide may exert their toxic effects by peroxidation of the unsaturated fatty acids of the lung and other tissues. To test this hypothesis, mice will be fed chemically defined diets known to produce lung lipids having differing degrees of susceptibility to lipid peroxidation. Diets will be deficient or sufficient in vitamin E or contain -tocopheryl quinone or phenolic antioxidants. Animals will be exposed to ozone and nitrogen dioxide and the dose-response relationship between the toxicity of these air pollutants and the peroxidizability of the lung lipids will be determined. The protective effect of vitamin E and other phenolic antioxidants will be determined. The effects of air pollutant exposure will also be measured by changes in growth and in lung lipid composition and enzyme content. Potential defense mechanisms of peroxidases will be investigated in both lung and liver. The toxic effects of ozone and nitrogen dioxide will be compared with putative chemical intermediaries of toxicity. These studies are designed to test the free radical theory of action of these air pollutants, and to determine the dietary levels of antioxidants necessary to prevent lung damage at current concentrations of air pollution.

LEAVE BLANK
Task: ERR-7.7
Funding: $61,000-76
Project Officer: Dr. Larry G. Hart
Agency: NIEHS
Est. Completion Date: 1977

[illegible]

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

College of Veterinary Medicine
Michigan State University, East Lansing, MI 48824

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Kim, J.C.S.
547-62-7042
Associate Professor of Pathology

TITLE OF PROJECT

Vitamin A Effect on Lung Cell Cycle Kinetics After NO_2

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Epidemiological as well as experimental evidence suggests that the development of lung cancer is a result of complex interaction of a number of exo-and endogenous factors. Besides the carcinogenic insult, environmental factors modifying the target organs, the host factors such as genetic susceptibility, aging, nutrition and other host factors may be of paramount importance.

Vitamin A is known to be essential on epithelial cellular differentiation and a deficiency of it causes squamous metaplasia. Nitrogen dioxide not only produces basal cell hyperplasia in the respiratory tract but also promotes infection and the tumoricenesis of chemical carcinogens. The presence of this component not only as an air pollutant but also in cigarette smoke emphasizes its importance.

The objective of this proposal is to investigate the influence of Vitamin A on the cell cycle kinetics of the hamster respiratory tract resulting from exposure to 10ppm of NO_2 for 5 hours. The role of Vitamin A in the respiratory tract will be studied by both light and electron autoradiocraphy with particular emphasis on epithelial cell differentiation and metaplasic changes.

LEAVE BLANK

Task: ERR-7.8
Agency: NIEHS
Project Officer: Dr. Larry G. Hart
Funding: $20,000 - 76
Est. Completion Date: 1977

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Vermont
Burlington, Vermont 05401

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Hart, Beth A.
Assistant Professor
Department of Biochemistry

TITLE OF PROJECT ERR-7.9

THE INTERACTION OF CADMIUM WITH THE PULMONARY ALVEOLAR MACROPHAGE.

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WOR (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The heavy metal cadmium, a known environmental pollutant, has been implicated as a causative agent in the development of lung pathology. It has been suggested that one of the sites of cadmium toxicity is the oxidative metabolism of the pulmonary alveolar macrophage. At present, there is little known about the interaction of cadmium with the alveolar macrophage under physiological conditions. It is the purpose of the proposed research, therefore, to study the transport, intracellular distribution, and accumulation of cadmium by the pulmonary alveolar macrophage and to relate the amount of cadmium accumulated within the cells to alterations in physiological function. Tran port by macrophage monolayers will be quantitated by the use of ^{109}cadmium. The intra cellular distribution of cadmium will be determined by measuring the radioactivity present in the sub-cellular fractions (i.e., soluble cytoplasmic fraction, mitochondri microsomes, and membranes) obtained after cell homogenation and differential centrifug tion. Attempts to identify a specific cadmium-binding protein will be made by using column chromatographic techniques. Direct measurements of the cadmium content of macr phages will be made with the use of an atomic absorption spectrophotometer equipped wi a micro-atomizer. Experiments will then be conducted to determine how the rate of cadmium transport is affected by pH, divalent ions, thiol-containing agents, protein(s and alveolar lining material, and to determine whether cadmium accumulation can occur during the phagocytosis of bacteria and/or kaolin. Macrophages that have accumulated known amounts of cadmium under different environmental conditions will also be monitor for phagocytic activity, release of lysosomal enzymes, endogenous respiration, and ATPase activity. Comparative studies with macrophages from various animal sources are planned. It is hoped that the results of the proposed study will contribute to our understanding of the role cadmium plays in the development of lung pathology in man.

LEAVE BLANK

Task: ERR-7.9
Funding: $37.617
Agency: NIEHS
Project Officer: Dr. Larry G. Hart
Est. Completion Date: 1977

SECTION 1

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D6-E772-BCU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California, Davis, California

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

See attached list.

DONALD L. DUNGWORTH et al

TITLE OF PROJECT

Pulmonary Effects of Environmental Oxidant Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Rats and monkeys will be chronically exposed to oxidant air pollutants, primarily ozone, at concentrations approximating high ambient levels (0.2 - 0.5 ppm). A multidisciplinary group will make integrated biochemical, microbiological, physiological and morphological evaluations of effects. The findings will have relevance to the specific problem of air pollution and to a general understanding of pulmonary pathobiology.

By plotting the relative levels of sensitivity of the various parameters studied and the effects observed, a basis will be provided for making predictions of possible long-term consequences of photochemical smog on man. Comparison of effects in rats and monkeys should provide for more confident extrapolation to man and hence enable the setting of rational air quality criteria.

A primary goal is to test critical hypotheses concerning biochemical, immunological and cellular mechanisms responsible for the deleterious effects of the pollutants. Major pathogenetic and modifying factors of interest are: the role of lipid peroxidation in initiating damage; the induction of antioxidant defense mechanisms by continued exposure and the general phenomenon of adaptation; the sites of impairment in pulmonary alveolar macrophages and components of the immune system in the lung; the sequence and nature of lesions resulting in the development of chronic obstructive lung disease (bronchitis/emphysema) and interstitial fibrosis.

An additional goal is to explore further the potential prophylactic value for human populations of dietary antioxidants such as vitamin E.

LEAVE BLANK

TASK: 7.10
Agency: NIEHS
Project Officer: Dr. Larry G. Hart
Funding: $163,015 - 76
Est. Completion ,Date: 1977

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK
PROJECT NUMBER
EPA-IAG-D6-E772-BCU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Kansas
Lawrence, Kansas 66045

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Duane G. Wenzel 391-16-5213
Program Director
Pharmacology and Toxicology

Carlton K. Erickson 385-36-5714
Professor of Pharmacology and Toxicology
Pharmacology and Toxicology

Howard Rytting 528-54-7096
Asst. Professor of Pharmaceutical Chemistry
Pharmaceutical Chemistry

TITLE OF PROJECT ERR-7.11
Environmental Cellular Toxicology Program

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERLINE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

This is a request for an Environmental Cellular Toxicology Program at The University of Kansas. The mission of the unit will be to initiate, coordinate and to facilitate research of investigators in the area of the toxicology of environmental toxicants at the cellular level. The emphasis is to be on the measurement of a variety of toxicant-induced alterations of cultured or isolated cells as early indices of injury. The thrust of this approach will be to establish quantitative methodologies that relate to mechanisms of toxicity. Cell models are to include: blood platelets [illegible]

The program will be housed primarily in the Department of Pharmacology and Toxicology but it is to include individual investigators (present and future) from other departments. To be coordinated with the program is a training function directed toward graduate education of students in the discipline of cellular toxicology. Because the Department of Pharmacology and Toxicology is integrated with the Departments of Medicinal Chemistry and Pharmaceutical Chemistry in the School of Pharmacy, and shares the use of major equipment with the Chemistry Department and others, the resources of these other departments are also available to solve problems related to the research program as set forth and to graduate student education in Cellular Toxicology.

LEAVE BLANK

TASK: ERR-7.11
Agency: NIEHS
Funding: $54.826
Project Officer: Dr. Larry G. Hart
Est. Completion Date: 1977

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773 - 78 BCX

TITLE OF PROJECT
Assessment of Energy Occupational Safety and Health Problems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: William L. Wagner, Chief, Environmental Investigations Branch
and Donald F. Knowles, Jr., Industrial Hygiene Engineer
Phone: (304) 599-7421

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Appalachian Laboratory for Occupational Safety and Health is responsible for developing and maintaining a program designed to identify occupational health problems associated with the extraction, processing, utilization, and conservation of energy resources. This project is to provide technical support necessary to identify and define future NIOSH project areas related to energy. There will be interaction with other NIOSH scientists and scientists in other federal agencies and other institutions associated with energy production. Limited exploratory field investigations will be conducted to evaluate current and proposed processes, potential worker exposures, and availability of records and study populations. The principle work will be done by task order contract.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1 -CX

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate* F.Y.
240K 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
June 1976

*Funds approximate not for citation. D SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E773 - 78 BCX

TITLE OF PROJECT
Mortality, Morbidity and Industrial Hygiene Study of Oil Shale Workers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: Robert Reger and Joe Costello, Epidemiologists, Phone (304) 599-7501; William G. Jones, Industrial Hygienist, Phone (304) 599-7421

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Appalachian Laboratory for Environmental Safety and Health, 944 Chestnut Ridge Road, Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is a study of 444 men who have worked in pilot oil shale operations. The cohort will be divided into three smaller cohorts consisting of (1.) 294 men from the U.S. Bureau of Mines and (2) 135 men of the Joint Venture of the Colorado School of Mines Research Institute and COLONY in Anvil Points,Colorado, and also (3) 15 men from the Union Oil Retort facility in Grand Valley, Colorado. A retrospective mortality study of approximately 60 men will be done in house while a cross-sectional morbidity examination to evaluate several morbidity aspects that may be associated with oil shale occupations will be done by contract. Mortality due to 21 specific causes of death will be determined after an extensive follow-up effort and the obtaining of death certificates of those determined to be deceased. Observed deaths will be compared to those expected to uncover excess deaths due to a particular cause. Numerous indices of health will be assessed through the physical examinations and health questionnaires administered to the living members of the cohort.

Further activities tentatively include environmental exposure and medical assessments of workers entering the industry.

The Industrial Hygiene aspects of this study will be a joint U.S. and USSR research project on the health effects associated with the oil shale industry. William Wagner will make an initial trip to the USSR to develop joint US-USSR survey protocol. A Russian delegation headed by Dr. Gogovsky will then visit the U.S. for approx. 3 weeks in May 1977. The Environmental Investigations Branch will be responsible for the planning of this trip. Contact will be made with those people knowledgeable in oil shale technology, and those who are or have been involved in health studies related to oil shale mining and retorting. Three industrial hygienists from the EIB are tentatively scheduled to travel to the Soviet Union in September to perform walk through surveys of USSR oil shale operations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2 - CX	John F. Finklea, M.D.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
290K	76			11/78

*Funds approximate not for citation AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E773-78 BCX

TITLE OF PROJECT
Recommended Standards for Coal Gasification Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Murray L. Cohen, Project Administrator Phone (301)443-3913
DHEW/PHS/CDC/National Institute for Occupational Safety and Health
Division of Criteria Documentation and Standards Development
Priorities and Research Analysis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health
5600 Fishers Lane
Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Guidelines for good work practices and recommended occupational safety and health standards are being developed for coal gasification pilot plants. Similar guidelines and recommendations will be developed for demonstration and commercial scale coal gasification plants.

Pilot plant guidelines will be based on available world-wide litercture, and data that have been generated by federal agencies(EPA, ERDA). Guidelines for larger scale plants will be based on field data collected by NIOSH and extrapolations/predictions from the data used in developing the pilot plant guidelines.

If implemented, these guidelines will provide some measure of worker protection from hazardous exposured until such time when formal standards may be developed.

Anticipated publication date of pilot plant guidelines is Second Quarter, FY 77. Anticipated publication date of guidelines for larger scale plants is October 1977.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE October 12, 1976

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER John F. Finklea, M.D.
x	AGENCY STAFF *(Intramural)*	3 - CX	
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NIOSH
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100K	76			3/77

*Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E773 - 78 BCX

TITLE OF PROJECT
Industrial Hygiene Study of Coal Gasification Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Donald F. Knowles, Jr., Industrial Hygiene Engineer; Phone (304) 599-7421.

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for
Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is a contract to perform an indepth industrial hygiene characterization of worker environments in three coal gasification pilot facilities. The three pilot plants will be studied at the rate of one plant per year for 3 consecutive years. Each plant project will be divided into three tasks. Task I includes a literature search, pilot plant walk-through, grab sampling, laboratory analysis, documentation and description of work places and a report of study proposal to the project officer. Task II includes qualitative area, personal, and bulk sampling, laboratory analysis, documentation of results and preparation of a sampling protocol for Task III. Task III includes quantitative detailed industrial hygiene monitoring, sample analysis and determination of eight hour daily time weighted average and peak concentrations of potentially hazardous substances.

A final report for each pilot plant will be submitted by the contractor and will include: (a) past & present worker exposure (by job) constructed on the information that is collected on the changes in processing, ventilation, environmental control, work practices; (b) industrial hygiene practices at the facilities; (c) time weighted and peak concentration found in the work place for each job type; (d) recommendations for control of worker exposures; (e) identification of worker design parameters for worker protection controls to be integrated in demonstration and commercial plant designs; (f) identification of additional problem areas in the coal conversion industry requiring further research.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3 - CX

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate*
150K

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
3/77

*Funds approximate not for citation.

AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773 - 78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Industrial Hygiene Study of Coal Liquifaction Processes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Frank J. Hearl, Industrial Hygiene Engineer,
Phone (304) 599-7421

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for
Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An RFC will be developed for the industrial hygiene study of coal liquifaction processes. Poorly contained coal liquifaction processes produce emissions which evidence indicates may constitute a carcinogenic risk, especially for lung and skin cancer. This study will address liquifaction products, process and material containment methods, worker exposures, health hazard control equipment, and the toxicologic properties of process materials. Identification of liquifaction process health hazards in the developmental phase of the technology will provide necessary information for health protection design considerations. In order to prevent long term effects in both workers and the general population, industrial hygiene findings and recommendations will be incorporated into present coal liquifaction technology development.

The RFC will require an industrial hygiene program that includes a complete literature search, a preliminary survey, a qualitative survey and a quantitative survey. The overall objective will be an in-depth industrial hygiene characterization of worker environments in coal liquifaction plants.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (*Medical, dental, etc.*) None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (*Check one*)
☐ AGENCY STAFF (*Intramural*)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
4 = CX

PROJECT OFFICER
JOHN F. FINKLEA, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate* 125K	76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 3/77

*Funds approximate not for citation.[1] AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E773- BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Coal Liquifaction and Gasification Worker Health Effects Conference

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
5

PROJECT OFFICER
JOHN F. FINKLEA, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate* | F.Y. | NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y. | STARTING DATE | ESTIMATED COMPLETION DATE
25,000 | 76 | 0 | | 8/77

*Funds approximate not for citation.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAC-D6-E773- 78 **BCX**

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mortality and Industrial Hygiene Study of Workers Exposed to Sulphates and H_2SO_4.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: Melvin Cassady and Bob Rinsky
Phone: (513) 684-3255

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Division of Surveillance, Hazard Evaluations and Field Studies, 4676 Columbia Parkway, Cincinnati, Ohio 45226

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA in its CHESS report (1970-71) studied seven U.S. cities for community exposure to different air contaminants. One community had a primary exposure to sulfur oxides and particulates. EPA's epidemiological study has indicated that soluble and insoluble sulfates have a more adverse effect on human health than particulates or SO_2. The National Air Quality Advisory Committee has suggested that particulates be studied not as total suspended particulate but according to particle size distribution.

The findings of the CHESS study strongly suggest that occupational exposures to sulfates need further study in terms of exposure levels and mortality experience.

This project will continue to determine exposures to a variety of soluable and insoluble sulfates in a number of industries. These data will be used to choose populations for mortality studies beginning in FY'77. The study will also be devoted to supporting field testing of the sampling and analytical methods.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
7 -CX

PROJECT OFFICER
John F. Finklea

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate
32.8K

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1976

Funds approximate not for citation.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773- 78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Morbidity and Industrial Hygiene Study of Workers Exposed to SO_x, H_2, SO_4, NO_x, HNO_3

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: John Gamble, Epidemiologist and William G. Jones, Industrial Hygienist, Phone: (304) 599-7421

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Sulfur oxides (SO_x) and sulfuric acid mist (H_2SO_4) are upper and total respiratory irritants. Over 700,000 workers are potentially exposed. Nitrogen oxides (NO_x) and nitric acid (HNO_3) are primarily lower respiratory tract irritants. Over 1-1/2 million workers are potentially exposed. The toxic effect of these compounds derives primarily from the fact that they are strong acids, or from corrosive acids on contact with moist mucus membranes. Many documented cases of acute over-exposure indicate their irritating and toxic properties. Effects of low-level chronic exposure are not known, and there is little information on dose-response relations. Both NO_2 and SO_2 are common air pollutants. Acute effects of exposure will be etermined in workers exposed to relatively pure mixture of sulfur and nitrogen compounds. Pulmonary function tests will be administered before and after work, while simultaneously measuring environmental exposure to the individual chemical species. Chest x-rays will be taken, and the prevalence of acute and chronic respiratory symptoms, body burden (methemoglobin, urine, and salivary pH) and dental erosion will be determined. An estimate of total cumulative exposure from work histories will be used to determine chronic effects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
— NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
7-CX

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate F.Y.
268.4K* 76

NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1976

*Funds approximate not for citation.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E773 - 78 BCX

TITLE OF PROJECT

Assessment of Safety in Energy Industries

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Richard Wiberg
Phone: (304) 599-7331

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Safety and Health, 944 Chestnut Ridge Rd., Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The energy shortage will result in an accelerated expansion in the energy producing industries which makes these critical installations even more vulnerable to mishaps. Accidents and catastrophic incidents not only affect workers at these workplaces but the entire surrounding population who would be exposed to pollutants, toxic fumes, explosions and fires. The loss of resources and energy production have a critical economic impact on the nation. As a consequence, th[illegible] project will therefore prove to be of serendipitous benefit to other federal governmental agencies such as EPA, ERDA and DOT and cooperation and coordination with these agencies will be maintained. Since regulations of nuclear plants are not under the specific authority of ERDA, these facilities are not included within the scope of this project. Energy industries employing workers covered under the Occupational Safety and Health Act and utilizing fossil fuels and petroleum (liquid and gaseous hydrocarbons) will be assessed as to safety problems, particularly fire and explosions, which would indicate vulnerability in life safety of the immediate population. Accidents involving two or more injuries or one fatality will be tabulated, explored and studied in case histories from on-site investigations. The final report will contain recommendations for future actions that can be implemented within a reasonable expenditure of funds.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None		Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☒	AGENCY STAFF *(Intramural)*	9- CX	John F. Finklea, M.D.
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		NIOSH

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100K	76			1976

*Funds approximate not for citation 86 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773 - 78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mortality and Ind. Hyg. Study of Workers in Coal Fired Power Plants (TVA)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: Dr. Carl Ortmeyer and William L. Wagner
Phone: (304) 599-7421

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Safety and Health, 944 Chestnut Ridge Rd., Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pulmonary disease problems, particularly pneumoconioses and airway obstructive diseases could arise from exposure to pollutant gas emissions such as SO$_2$ and NO$_2$ from coal burned as fuel for steam-powered electricity generating plants. Pneumoconioses could develop from years of exposures to coal dusts in coal-loading areas or to asbestos fibers in linings of steam pipes.

The primary purpose of this study is to measure specified effects (decreased longevity, "premature" deaths from pulmonary diseases, and early retirement due to disability attributed to such diseases) on high risk workers in coal-fired steam electricity generating plants who have had exposures to these pollutants that varied in duration and intensity.

In the process of collecting information on early disability and on mortality of employees exposed to these air pollutants, data will also be obtained on neoplasms of the respiratory system and on diseases of the heart. This evidence can be analyzed in relation to some hypotheses about carcinogenic effects of pollutants and effects on the heart or lung impairments.

The TVA and the Environmental Investigations Branch will jointly conduct preliminary Industrial Hygiene surveys to select approx. 10 potentially hazardous occupations in TVA coal-fired plants. TVA will then conduct detailed cross-sectioned Industrial Hygiene Studies of workers invloved in these "potentially hazardous" occupations. TVA shall also review existing industrial hygiene data on past exposures in the potentially hazardous occupations along with information on control methods in order to retrospectively estimate cumulative working lifetime exposures in the identified hazardous occupations.

(continued on reverse side)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) None	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☒ AGENCY STAFF (Intramural) ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 10 - CX	PROJECT OFFICER John F. Finklea, M.D. RESPONSIBLE ORGANIZATION NIOSH

Funds Estimate* 57.1	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE 7/88

*Funds approximate not for citation. S AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E773 - BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Medical Study of Divers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Joe Costello
Phone: (304) 599-7307

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Safety and Health, 944 Chestnut Ridge Road., Morgantown, W. Va. 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the study is to establish a base line of the incidence, distribution and control of diving related illnesses in the commercial diving industry. Physiological hazards are not limited to symptoms of inadequate decompression such as bends. Equally serious in the long run are problems relating to pulmonary and vestibular function, brain damage, hearing loss, and dysbaric osteonecrosis.

Because of the complexity of the problems, plus the fact that we are continually operating at the edges of medical and technical knowledge, long term studies are required, especially in hyperbaric medicine, which are not likely to be done by the individual diving companies.

During the first quarter a review of the literature and past NIOSH contracts will be done. A protocol and study plan will be worked out and then submitted for contract bid.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
11- CX

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate*
156.7 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
9/78

*Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773-78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Develop Criteria for Recirculation of Industrial Exhaust Air

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Robert Hughes
Phone: (513) 684-4295

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories
and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Since the advent of the energy crisis, recirculation of industrial process exhaust air has been receiving widespread attention as an energy conservation method. Recirculation of process exhaust air to the workplace rather than to the outside will reduce the amount of heating or cooling of make up air with a significant reduction in energy usage. Recirculation of exhaust air has, in the past, been used infrequently and has essentially been limited to processes which generate nontoxic nuisance type dusts. The major limiting factor in the widespread use of recirculation for toxic materials is the lack of criteria relating to both system performance and work protection. Without such criteria, the use of recirculation systems could result in serious worker exposure to toxic substances.

This project will be a follow-on to a study initiated in FY 74 to develop criteria for the recirculation of exhaust air. The results of that initial contract effort will be evaluated and a symposium then held on recirculation of exhaust air. After this, a one-year contract will be awarded to develop the exhaust system performance and reliability criteria required to permit safe recirculation of exhaust air from processes which generate toxic gases, vapors, fumes and particulates. Studies will also be made to determine the effect of process variables such as temperature and contaminant generation rate on system effectiveness. Another follow-on contract will be awarded to investigate the air cleaning devices necessary to permit recirculation of exhaust air.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF (Intramural)	12 - CZ	John F. Finklea, M.D.
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NIOSH
☐ RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
271.2	76			9/77

*Funds approximate not for citation AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E773-78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mortality Study of Small Fibrous Glass Workers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: David Bayliss
Phone (513) 684-2761

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Division of Surveillance, Hazard Evaluations and Field STudies, 4676 Columbia Parkway, Cincinnati, Ohio 45226

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A recently completed study of fibrous glass workers at a plant in Ohio failed to demonstrate any increased mortality due to malignant respiratory disease. However, increased mortality was noted due to non-malignant respiratory disease in the same study population. The failure to observe an excess of malignant respiratory disease in this population possibly may have been due to the fact that the major portion of the study group was generally exposed to fibers of larger diameter, which generally have not been shown to be carcinogenic in man or animals.

This study proposes a retrospective mortality study on a sub-cohort of the entire working population who were subjectively determined through a double-blind study to be exposed to fibers with diameters from 1 micron to 3 microns in diameter, a range suspected of having carcinogenic potential to man. It must be cautioned, however, that this study will not answer the question of carcinogenesis with respect to the fine fiber (less than 1 micron in diameter).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER John F. Finklea, M.D.
X	AGENCY STAFF *(Intramural)*	6 - CX	RESPONSIBLE ORGANIZATION NIOSH
	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40.2	76			

*Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E773- 78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mortality and Industrial Hygiene Study of Workers Exposed to Mineral Wool

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: Ralph Zumwalde and Greg Ness
Phone [illegible] (513) 684-2761

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health
Division of Surveillance, Hazard Evaluations and Field Studies
4676 Columbia Parkway, Cincinnati, Ohio 45226

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In view of the vast quantity of health data demonstrating the carcinogenicity of asbestos fibers, insulation and other industries have begun searching for substitute materials to replace asbestos. However, the fibers constituting these substitute materials may be similar in shape and size to that of asbestos. It is felt by many researchers that the morphology of the fibers is the most important factor in the development of malignant and non-malignant respiratory disease.

Therefore, since little is known of the health effects to man of respirable fibers other than asbestos, it is incumbent upon the National Institute for Occupational Safety and Health (NIOSH) to investigate epidemiologically the human health consequences of respirable fiber exposures and other insulation materials.

This study will be approached through environmental surveys and mortality studies designed to quantify the risk of exposure to mineral wool used as well as determine the presence of other substances that may promote the development of adverse health effects or act in a synergistic manner.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
6 - CX

PROJECT OFFICER John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate* Y.
70.8 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
4/78

*Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773 -78 BCX

TITLE OF PROJECT
Mortality and Industrial Hygiene Study of Workers exposed to Clay Fibers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Greg Ness, Epidemiologist and Ralph Zumwalde, Industrial Hygienist
Phone (513) 684-2761.

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Division of Surveillance, Hazard
Evaluations and Field Studies, 4676 Columbia Parkway, Cincinnati, Ohio 45226

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In the process of studying the chronic health hazards from occupational exposure to respirable fibers such as asbestos, fiberglas, and mineral wool, the xxx National Institute for Occupational Safety and Health has identified additional fiberous minerals which xxxxx are of occupational health concern. Attapulgite, one constituent of a group of substances collectively known as "Fuller's Earth", is one such mineral fiber which has been discussed with chronic lung disease.

A mortality study of a population with an occupational exposure to Attapulgite of approximately thirty (30) years since onset of exposure is being conducted. This will permit investigation of long term chronic health effects of exposures to small diameter, short mineral fibers by a study population with sufficient latency.

An industrial hygiene study has been completed and data analysis is underway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.): None
SIGNATURE OF PRINCIPAL INVESTIGATOR:
DATE: Oct. 30, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 6 - CX
PROJECT OFFICER: John F. Finklea, M.D.
RESPONSIBLE ORGANIZATION: NIOSH

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
64,500	76	1	6/75	5/78

* Funds approximate not for citation, AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-DG-E773-78 BCX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Develop Analytical Methods to Determine OCC Exposure to H_2SO_4,Sulfate,Suflite,HNO_3& NO_2

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors: Janet C. Haartz, Ph.D., Supv. Research Chemist, MRB,DPSE and
Peter M. Eller, PH.D., Research Chemist, MRB, DPSE
Phone: (513) 684-2628

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, 4676 Columbia Parkway,
Cincinnati, Ohio 45226

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Fossil fuels contain varying amounts of sulfur and nitrogen. In combustion of these fuels, with air, oxidized forms of sulfur and nitrogen are released into the occupational environment as well as to the general environment.

In addition, a number of sulfur and nitrogen species are present in air samples in smelters, refiners, and other industries. Sulfur may be present in the form of sulfuric acid, and metal sulfates, sulfites, thiosulfates, and sulfides. Also, elemental sulfur, sulfur oxides (adsorbed SO_3 and SO_2) and H_2S may be present. Nitrogen species include nitric acid and metal nitrates and nitrites, and oxides of nitrogen (NO_2 and NO). Separation and quantitation of these [illegible] species are desirable for assessment of their effect on health. Analytical methods using ion exchange chromatography, polarography, specific ion potentiometry, ESCA, or others which differentiate the oxidation states of sulfur and nitrogen are needed. This project will evaluate the alternatives available and develop protocols for sampling/analysis of these species.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
None
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
7a&b - CX

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate* F.Y.
93K 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
10/78

*Funds approximate not for citation.16 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0061

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E773- 78 BCZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Energy Industry Medical Protocols.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
None

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
Oct. 29, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☒ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
See BCX AP
8- CZ

PROJECT OFFICER
John F. Finklea, M.D.

RESPONSIBLE ORGANIZATION
NIOSH

Funds Estimate
150K

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE

ESTIMATED COMPLETION DATE
1976

*Funds approximate not for citation.

D. ECOLOGICAL EFFECTS

D. ECOLOGICAL EFFECTS

TABLE OF CONTENTS

Ecological Effects

Agency	Page
EPA	279-300
ERDA	301-311
NIEHS	312-314
NOAA	315-316
TVA	317-327
USDA	328-331

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CMB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Macrobenthic survey in the vicinity of the METULA oil spill, Magellan Strait, Chile.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT
Drs. Victor A. Gallardo and Jorge G. Castillo, Department of Marine Biology and Oceanography, University of Concepcion, Concepcion, Chile.
Drs. Richard C. Swartz and Donald J. Baumgartner, Marine and Freshwater Ecology Branch, EPA, Marine Science Center, Newport, Oregon 97365 (503)867-4031.

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Concepcion, Department of Marine Biology and Oceanography, Casilla 1367
Concepcion, Chile

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A. To quantitatively describe the faunal composition, density, standing crop, diversity, dominance, and spatial homogeneity of the subtidal macrobenthos of Bahia Felipe, the site of the METULA spill, and immediate neighboring areas.

B. To correlate changes in community structure with depth, bottom water quality, and sediment characteristics, especially oil contamination, particle size distribution and organic carbon content.

C. To establish a reference collection of benthic invertebrates for future taxonomic comparisons.

The survey will be performed through standard quantitative benthic biology techniques on board R/V HERO. A sampling grid has been designed to observe the impact of oil both from the source of the spill and the areas where it was finally deposited. Faunal numerical, gravimetric and taxonomic analysis will be followed by statistical-mathematical treatment of the data to determine several of the important bio-indices useful in the understanding of possible alterations of the biota by the spilled oil.

The sampling is expected to take place in the coming southern autumn from R/V HERO by a binational team of US and Chilean scientists.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
Biology Institute, Dept. Biol.Mar.

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
5 Febr. 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☑ RESEARCH GRANT

TASK NO.
2C

PROJECT OFFICER
R.C. Swaetz

RESPONSIBLE ORGANIZATION
ERL, Corvallis

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
47,350	76	0	4/1/76	6/30/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA CMB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Montana Coal-Fired Power Plant Bioenvironmental Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. N. R. Glass, Director
Ecological Effects Research Division

Dr. R. A. Lewis
Terrestrial Ecology Branch, EERD

Dr. Lawrence Raniere, Chief
Terrestrial Ecology Branch, EERD

NAME AND ADDRESS OF APPLICANT INSTITUTION
Corvallis Environmental Research Lab, USEPA
200 SW 35th Street
Corvallis, OR 97330

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The two objectives of this program are: (1) to develop procedures which can be used to forecast and assess the impacts of stressants from energy producing activities on affected ecosystems; and (2) to identify and describe the impacts for a given set of ecosystems.

The approach is to combine field measurements with on-site field experimentation and laboratory process studies. Remote sensing, modelling activities, and other associated supportive efforts will be utilized to maximize the activity.

The Corvallis Environmental Research Laboratory has mounted a field effort in Montana. Besides the normal field facilities (mobile air quality laboratories, biological analysis systems, etc.) an effort has been made to coordinate the project with other scientific centers (Grassland IBP, ERDA, EPA and NOAA) to include the necessary scientific and engineering expertise to guarantee a unified program. It is intended that the research information gathered from this project be utilized in such a fashion that a set of biological parameters are found that will allow planning managers to project cost/benefit relationships prior to locating an energy producing facility.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert A Lewis

DATE: P 2 6 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
X AGENCY STAFF (Intramural)
NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.: 3

PROJECT OFFICER: Dr. Norman R. Glass

RESPONSIBLE ORGANIZATION: Corvallis Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$437,000	76	Two Years	FY 74	FY 79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
\CNA

TITLE OF PROJECT
Effect of Temperature on Growth and Survival of the White Sucker

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Lloyd L. Smith, Jr., Professor, Dept. of Entomology, Fisheries, & Wildlife
Walter M. Koenst, Assistant Scientist, Dept. of Entomology, Fisheries, & Wildlife

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Minnesota
2642 University Avenue
Minneapolis, Minnesota 55455

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The first objective of the project is to determine the growth rate of Catostomus commersoni under different temperature regimes and to construct response curves that can be related to food consumption. Subordinate objectives are (1) to determine the influence of size on growth response at different temperatures and (2) to determine the relationship of optimum temperature to incipient lethal temperatures. A second objective is to determine the influence of reduced rations as compared to ad libitum rations on the optimum temperature for growth in three size groups of fish. Data will be gathered and analysed in a form which will provide input to ecosystem modeling.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
Agricultural

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
1/23/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☑ RESEARCH GRANT

TASK NO.
1D

PROJECT OFFICER
Ken Hokanson

RESPONSIBLE ORGANIZATION
EPA

FUNDS OBLIGATED
50,298

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
7/10/76

ESTIMATED COMPLETION DATE
1/9/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CNA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Hydrologic Characterization of Coal Spoil Piles in Northwest Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

George Leavesley, Principal Investigator, USGS - Water Resources Div.-Colo. Dist. Off.
Denver Federal Center, Denver, Colorado 80225
J.E. Bieselker, Project Supervisor (Same as above)

NAME AND ADDRESS OF APPLICANT INSTITUTION

J.E. Bieselke
Same as above

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to study the hydrologic characteristics of coal spoil piles west of the Edna Mine in Routt County, Colorado. The effort is designed to complement on-going studies by Colorado State University on the water qulaity degradation potential of mine spoils. Specifically, the project will examine trace metal concentrations and movement; consider the moisture regime of the spoils profile; examine changes in undisturbed areas; and develop a model to predict the impact of disturbed areas on total basin response. Lysimeters will be installed and a rainfall simulator will be used. Water samples will be taken from observation wells. Soil moisture probes will be utilized.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.: 3

PROJECT OFFICER: Donald I. Mount

RESPONSIBLE ORGANIZATION: EPA/ERL-Duluth

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$555,000	76		1975	June 1978

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CPA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Thermal Effects of Energy Utilization in Combination With Other Pollutant Stresses

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Don Miller

Dr. Juan Gonzalez

Dr. Eugene Jackim

NAME AND ADDRESS OF APPLICANT INSTITUTION
Environmental Protection Agency
Environmental Research Laboratory
South Ferry Road, Narragansett, RI 02882

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Extramural studies, inconjunction with in-house studies, on a different geoclimactic province, will be conducted which will provide a defensible basis for applying thermal elevation criteria to all areas under the jurisdiction of EPA. Such studies will recognize the interactions between thermal stress and those resulting from simultaneous or intermittent stresses from other sources.

Studies on water accommodated fractions of oil, such as might be discharged from drilling platforms are being supported in-house.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
XX AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Dr. Donald K. Phelps

RESPONSIBLE ORGANIZATION
ERL-Narragansett 838-4843

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
86,000	76		Continuing	6/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CPA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

A FACILITY FOR THE EXPERIMENTAL ANALYSIS OF COASTAL MARINE ECOSYSTEMS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. John A. Knauss, Dean
Dr. Scott Nixon
Dr. Michael Pilson
Dr. Theodore Smayda
Mr. James Griffin, Project Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION

Graduate School of Oceanography
University of Rhode Island
Kingston, Rhode Island 02881

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives:

a) to develop a facility and methodology for the experimental analysis of coastal marine ecosystems and their response to energy-related environmental stresses

b) to relate the experimental results to ecosystem theory and its implications for the management of coastal marine environments.

(2) Approach:

Replicate meso-scale experimental ecosystems simulating a variety of common coastal marine environments will be developed and maintained at a special shore-based laboratory. A number of stresses or environmental perturbation associated with energy development will then be applied over a range of intensities to these systems before, during and after the application of stress. Similar field experiments may also be carried out on a small scale in some environments.

(3) Current Plans:

The first project will involve 9 shore-based experimental water columns (5 m deep x 2 m dia.) with associated bottom sediments and benthos. The microcosms will first be studied for replicability and for differences between tanks that are run as open or closed systems with respect to seawater flow. After this preliminary work is completed, a series of experiments involving the addition of water soluble petroleum hydrocarbons at concentrations of 100 and 1000 ug/l will begin.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Graduate School of Oceanography	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☒ RESEARCH GRANT	TASK NO. 2	PROJECT OFFICER Dr. Eric D. Schneider RESPONSIBLE ORGANIZATION ERL-Narragansett, RI - EPA 838-4843

FUNDS OBLIGATED 985,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1	STARTING DATE 7/22/75	ESTIMATED COMPLETION DATE 7/30/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CPA

TITLE OF PROJECT
National Marine Pollution Monitoring Program

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Edward D. Goldberg, SS# 548-18-011, Professor of Chemistry
Geological Research Division
Scripps Institution of Oceanography

NAME AND ADDRESS OF APPLICANT INSTITUTION

The Regents of the University of California
University of California, San Diego
La Jolla, California 92093

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A surveillance of four collectives of pollutants in U.S. coastal waters is being carried out through their concentrations in two sentinel organisms--mussels and barnacles. The pollutant species include heavy metals (lead, cadmium, mercury, selenium, zinc, silver and copper), chlorinated hydrocarbons (DDT residues, polychlorinated biphenyls, hexachlorbenzene, dieldrin, endrin, heptachlor, benzene hexachloride, cis and trans chlordane and the insecticidal derivatives oxychlordane and heptachlor epoxide), artificial radionuclides (plutonium-238, plutonium-239+240, americiem-241 and cesium-137), and petroleum hydrocarbons (to include measures of the concentrations of alkanes, cycloalkanes and aromatics, including 2, 3, 4 and 5 ring polynuclear condensed species).

The program includes sites off the east, west and Gulf coasts of the U.S. as well as off Alaska, Guam and Samoa. Over two hundred and fifty samples will be taken during the first two years of the project and analyzed in 8 laboratories, two for each set of pollutants. Interlaboratory comparisons are being made on the pollutant analyses.

The goals of the program will be the assessment of the U.S. coastal waters for the support of marine resources such as food from the sea, the vitality of communities of marine organisms and the continued use of non-living resources such as beaches and harbors and the prediction of future exposure levels of pollutants based upon the best existing information and models.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Scripps Institution of Oceanography		

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.: 3

PROJECT OFFICER: Dr. Gerald Hoffman

RESPONSIBLE ORGANIZATION: ERL-Narragansett, RI 838-4843

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
315,000	76	0	12/75	12/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PR CTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQB

TITLE OF PROJECT Studies on environmental chemical carcinogens present in economically-important molluscs and crustaceans from Oregon bays, estuaries and inshore areas: ...

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Michael C. Mix
Associate Professor of Biology
Department of General Science

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oregon State University
Corvallis, Oregon 97331

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The principal objectives are: to determine the concentration of selected environmental carcinogens in economically-important molluscs and crustaceans from Oregon bays, estuaries and inshore areas; to determine if there is a potential public health hazard from consuming shellfish which contain carcinogenic petroleum by-products; to survey populations of bivalve molluscs, determine the incidence of neoplastic diseases in these populations and ascertain if there is any correlation between carcinogenic body burdens and incidences of such diseases; to determine if metabolic pathways exist in bivalves which lead to detoxification or modification of benzo(α)-pyrene; to determine the acute and chronic effects of exposing molluscan and crustacean gametes and larvae to selected chemical carcinogens, and evaluate the ecological consequences of such effects.

Seven economically-important shellfish will be sampled monthly during a two or three year period and the following studies will be conducted: quantitative and qualitative determinations of chemical carcinogens present in shellfish; histopathological examination of bivalves for neoplastic diseases; studies related to benzo(α)pyrene metabolism and rates of uptake, incorporation and elimination in natural populations of shellfish. Following completion of this research, personnel from appropriate state and federal agencies will evaluate the public health implications of our findings.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Michael C Mix	DATE November 14, 1975

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER Dr John A. Couch
	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION Gulf Breeze, Florida
	NEGOTIATED CONTRACT		
X	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 6/1/76	ESTIMATED COMPLETION DATE 5/31/77

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQB

TITLE OF PROJECT
Field Investigation of Brominated and Chlorinated Organic Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

George R. Helz
Chemistry Department
301-454-4850
also Rong Yew Hsu - same address

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Maryland
College Park, MD 20742

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Abstract

Amounts of chlorine presently used in the drainage basin of Chesapeake Bay, and probably also some other large estuaries, could be large enough to sterilize the Bay if this chlorine were not degraded. A review of degradation processes reveals that perhaps 1% of the total chlorine may be converted to halogenated organic compounds, and it is suggested that some of these may be long-lived and susceptible to biomagnification. Arguments are given to indicate that organic compounds produced by chlorination of estuarine and marine waters may differ fundamentally from those produced by chlorination of river water and sewage in that bromine derivatives may predominate over chlorine derivatives in the marine waters.

A research project is proposed to test these ideas in the field near a power plant which employs 4-15% estuarine water for cooling, and chlorinates this to control fouling. The site is free of other nearby anthropogenic sources. The objectives of the project will be:

1. Identify and quantify the halogenated organic compounds produced by the plant.
2. Determine chemical factors controlling yields of the various compounds by studying the cooling waters under a variety of conditions.

The project will provide an evaluation of the magnitude of this problem and may provide some indications of how the problem can be minimized by regulation of chlorinating procedures and cooling water quality.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED: Graduate School
SIGNATURE OF PRINCIPAL INVESTIGATOR: George R Helz
DATE: Sept. 3, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD
☐ AGENCY STAFF
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO. 1
PROJECT OFFICER: Dr. William Davis
RESPONSIBLE ORGANIZATION: BBFS, Gulf Breeze, Florida

FUNDS OBLIGATED: 73K
F.Y.: 76
NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.: 1
STARTING DATE: Aug. 1, 1975
ESTIMATED COMPLETION DATE: Aug. 1, 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
CQB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Sublethal Effects of chlorine on marine vascular plants and decapod crustaceans

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Morris H. Roberts, Jr.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Virginia Institute of Marine Science
Cloucester Point, Virginia 23062

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of the research are to define effects of continuous exposure to chlorine on larval development, juvenile growth, and reproductive parameters, for two selected marine decapod crustaceans, Panopeus herbstil and Pagurus longicarpus. Additionally the effects of chlorine on development of the coot clam, Mulinia lateralis, and blood serum constituents of the blue crab Callinectes sapidus will be studied. Preliminary data suggest that responses occur only at chlorine doses close to the lethal concentration. Reliable test systems developed to date will be used to define chlorine effects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Dr. William P. Davis
	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION BBFS, Gulf Breeze, Florida
	NEGOTIATED CONTRACT		
X	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$115, 382	76		7/15/75	7/14/77

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQB

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Cycling of xenobiotics through estuarine and marine sediments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Charles N. D'Asaro	Associate Professor	Dept. of Biology, Univ. West FL
Norman I. Rubinstein	Research Associate	Dept. of Biology, Univ. West FL

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of West Florida

Pensacola, Florida 32504

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research will examine a mechanism of cycling for various xenobiotics in and through estuarine and marine sediments. A lugworm, Arenicola cristata (Polychaeta: Arenicolidae), will be studied to define and quantify movement of compounds through the sediment as a result of reworking and biological accumulation. Experiments are designed to determine, (a) how lugworms move xenobiotics into and through the substrate when the compounds are introduced into the overlying water column; (b) how effectively lugworms move sorbed xenobiotics from various depths in the sediment to the surface and (c) what volume of sediment could be exposed to xenobiotics due to reworking by lugworms.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
University of West Florida
Department of Biology

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER
Dr. Frank G. Wilkes

RESPONSIBLE ORGANIZATION
Gulf Breeze, Florida

FUNDS OBLIGATED

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 4/1/76

ESTIMATED COMPLETION DATE 3/31/77

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE R 803893 02

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
CQB

TITLE OF PROJECT
Isolation and Study of Chloro-organics Resulting from Chlorination of Seawater

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Dr. James H. Carpenter, Chairman, Division of Chemical Oceanography, Univ. of Miami
Mr. Carroll A. Smith, Research Associate Professor, Div. of Chem. Oceano. U. of Miami

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Miami, Rosenstiel School of Marine and Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The proposed research seeks to identify the chlorine-containing and bromine-containing organic compounds that are formed when chlorine is added to seawater. Initial emphasis would be placed on study of reaction conditions that occur during power plant operations; i.e., up to 2 hours at temperatures up to 30°C with and without sunlight. Total organic halogenated compounds yield would be measured. The reaction products would be fractionated, using selective solubility and thin layer chromatography. Characterization would be carried out using gas chromatographic-mass spectral techniques and additional characterization would be based on UV and IR spectra with NMR for special cases.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Rosenstiel School of Marine and Atmospheric Science

SIGNATURE OF PRINCIPAL INVESTIGATOR James H Carpenter

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO. 1

PROJECT OFFICER Dr. William P. Davis

RESPONSIBLE ORGANIZATION BBFS, Gulf Breeze, Florida

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$160,000	76		7/15/75	7/14/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CQB

TITLE OF PROJECT
Effects of Energy Related Pollutants on Organisms and Ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Norman Richards, Mr. Patrick Borthwick, Mr. Stephan Schimmel, Mr. Lowell Bahner, Mr. James Patrick, Mr. Sam Tagatz, Mr. James Moore.

NAME AND ADDRESS OF APPLICANT INSTITUTION
U. S. Environmental Protection Agency
Environmental Research Laboratory
Sabine Island, Gulf Breeze, Florida 32561

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Offshore petroleum exploration and extraction activities may affect marine and estuarine environments. The objective of this research is to assess effects of resultant chemical emissions on representative organisms and communities. Bioassays using drilling muds and their components will involve a variety of test species and toxic effects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR Norman L. Richards

DATE Sept. 30, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
X AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 2

PROJECT OFFICER Dr. Norman L. Richards

RESPONSIBLE ORGANIZATION Gulf Breeze, Florida

FUNDS OBLIGATED

F.Y. 76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE 10/77

ESTIMATED COMPLETION DATE 10/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSA

TITLE OF PROJECT
Relationship of Biological, Chemical and Physical Characteristics of the.....

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. ...San Juan River to the Limnology and ecological productivity of the San Juan Arm of Lake Powell

Bob Thomas, Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

EPA - Environmental Monitoring and Support Laboratory
Las Vegas, Nevada

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In the near future the San Juan River Basin will be subjected to considerable pressures to develop its energy and non-energy resources. Such actions could have major impact on the biological, chemical and physical integrity of the San Juan River, Lake Powell and downstream environments.

A study of the San Juan River and the San Juan Arm of Lake Powell was initiated to further define baseline environmental conditions in the states areas. Data collection will emphasize phytoplankton, zooplankton, invertebrates, water chemistry, soil chemistry, sediment chemistry and physical parameters.

Major objectives are to assess the ecological importance of the San Juan Arm of Lake Powell, its dependence on the San Juan River and its relationship to the greater Lake Powell exosystem. Heavy metal contributions to the San Juan River System are to be further delineated with determinations made on the possible effects of heaby metal concentrations on the biological resource.

In addition, information collected as part of the study will provide input to the design of an optimum environmental monitoring system for the San Juan River Basin by EPA-EMSL.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO. 1 C	PROJECT OFFICER	
☐ AGENCY STAFF *(Intramural)*		RESPONSIBLE ORGANIZATION EPA, Region VIII, Denver	
☐ NEGOTIATED CONTRACT			
☐ RESEARCH GRANT			

FUNDS OBLIGATED 20 K	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 1	STARTING DATE 6/76	ESTIMATED COMPLETION DATE 6/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Chemical and Bacteriological Analysis of Stream Sediments in the Knife River Basin...

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. ...of North Dakota

Dr. Mary Bromel, Principal Investigator, Experiment Station - College of Agriculture
ND State University - Fargo, North Dakota 58102

Arlon Hazen, Project Supervisor (Dean & Director North Dakota State University)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Arlon Hazen, Experiment Station - College of Agriculture
Nortn Dakota State University, Fargo, North Dakota 58102

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Assessment of the chemical and biological status of sediments in the Knife River and its tributaries relative to ethrophying nutrients, pathogenic bacteria, toxic chemicals and self purification potentials of surface waters.

A major objective of this study is to obtain baseline data for stream sediments, determine sediment chemical quality and characterize sediment associated bacteria for a representative segment of the Knife River drainage that could be significantly impacted by future energy development.

A second major objective is to study data to enable assessment of sediment - bacteriological interrelationship for an area already impacted by pollution loadings from coal mine activities. Ideally a site within the interior drainage area of an active mine where waste has accumulated. The second site would be an area which has been impacted for years.

Criteria used for selection to establish baseline conditions should emphasize areas where there is a high probability for energy development, an area within the drainage development which has not been significantly disturbed by energy development, and an area where surface water drainage patterns are significantly defined so that future energy impact on surface water can be assessed with a reasonable degree of accuracy once development occurs. The above described second sampling site, an area already impacted by pollution loadings should provide information on the long-term effects of sediment loadings of coal mine activities on sediment related bacteria. Sampling of the baseline sites should be more frequent than of the impacted environment sites.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 4

PROJECT OFFICER Cooper H. Wayman

RESPONSIBLE ORGANIZATION EPA - Region VIII

Funds Estimate* $20,000
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
STARTING DATE 1 June 1976
ESTIMATED COMPLETION DATE 30 June 1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA CSA

TITLE OF PROJECT
Instream Value Studies - Tongue River, Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Ken Bouee, Principal Investigator, Univ. of Montana, Geology Dept., Missoula, MT
James Gore, Investigator, Univ. of Montana, Same as above
Dr. Arnold Silverman, Univ. of Montana (Project Supervisor) (Same as above)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dr. Arnold Silverman
Univ. of Montana, Geology Dept., Missoula, Montana 59801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A methodology is needed to predict the effects of changes in warm water stream flows on plant and animal ecosystems. In order to develop this methodology a research plan was established which provided for a literature search, a proposed methodology, and field testing of the proposed methodology.

Field testing, modification and verification of the methodology occurred on the Tongue River, Montana and was conducted in two phases. The first phase established tolerance limits and habitat preferences of biotic communities under naturally occurring stream conditions. Baseline biological data was also collected.

Phase two involved the application, evaluation and modification of the methodology within the Tongue River drainage. This work characterized the effects of flow variation on a range of habitat requirements for important aquatic species during summer and winter conditions.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 5	PROJECT OFFICER Cooper H. Wayman RESPONSIBLE ORGANIZATION EPA-Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$12.7 K	76		May 1, 1976	November 1, 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CSA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Effects of Energy Development on the Aquatic Resources of Two Upper Missouri....

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. ...Reservoie Ecosystems

Bill Nelson
Principal Investigator
North Centeal Reservoir Investigations, USFWS
Pierre, South Dakota

NAME AND ADDRESS OF APPLICANT INSTITUTION
Same as above

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives

a. Inventory and characterize the biological, physical, and chemical conditions of Ft. Peck Reservoir, Montana, and Lake Sakakawea, North Dakota in areas of current and/or potential energy development.
b. Identify and rank all known and anticipated impacts of energy or energy-related developments on the aquatic biota and water quality of these reservoirs. These items would include, but not be limited to, liquid and atmospheric waste emissions from coal conversion facilities, water withdrawals, construction activities, land use patterns, municipal wastes, energy transportation, etc.
c. Develop a simple mechanism, e.g., a matrix, to integrate data from a and b above so that the cumulative effects of energy development at various levels of intensity on the reservoir ecosystem can be predicted.
d. Based on information from a, b, and c, develop strategies, criteris, and guideline recommendations to:
    (1) provide realistic development alternatives to minimize damage to the aquatic environment;
    (2) mitigate losses resulting from energy development, and
    (3) where possible, utilize development-related environmental modifications to enhance water quality and fish and wildlife habitat.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	6	Cooper H. Wayman
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		EPA-Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20.000	76		June 1, 1976	June 30, 1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Fishery Investigations - Poplar River

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Robert Needham

NAME AND ADDRESS OF APPLICANT INSTITUTION
Montana Department of Fish and Game
Glascow, Montana

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Saskatchewan Power Corporation is presently developing a coal-fired power generating complex on the East Poplar River. Construction of a cooling reservoir (run-of-the-river) was initiated in 1975. The project could significantly alter the flow regimen of the Poplar and adversely impact water quality.

The Poplar River system contains a good sport fishery consisting of Walleye, Northern Pike, Bass, and Goldeye. Fish population studies were initiated in 1975 to acquire baseline information. Seining and electrofishing were conducted to determine species abundance and distribution (adult).

The objectives of this study are to gather quantitative data on the abundance and distribution of young-of-the-year walleye, northern pike, and smallmouth bass at selected sites in the Poplar drainage. In addition, all records of stream discharge, water quality, and temperature will be secured and evaluated to determine possible impact on sport fish populations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 7

PROJECT OFFICER
Cooper H. Wayman

RESPONSIBLE ORGANIZATION
EPA - Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$3,650	76		June 1, 1976	June 30, 1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CSA

TITLE OF PROJECT
Surface Water Quality Monitoring Program in Canadian Coal Development Impact Areas...

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. ....of the Poplar River - Montana

Mr. George Pike, District Chief, Principal Investigator, USDI, Geol. Surv.,
Federal Bldg. 21, P.O. Box 1696, Helena, Montana 59601

Les Sprenger, Project Supervisor, EPA, Reg. VIII, 1860 Lincoln, Denver, CO 80203

NAME AND ADDRESS OF APPLICANT INSTITUTION

Les Sprenger, Surveillance and Analysis Division
U.S. Environmental Protection Agency, 1860 Lincoln, Denver, Colorado 30203

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The USGS, WRD, Montana District Office will collect and analyze surface water quality data at the six stations listed below:

1. Middle Fork Poplar River Mr. Scobey
2. East Fork Poplar River Mr. Scobey
3. Middle Fork Poplar River @ International Boundary
4. West Fork Poplar River @ International Boundary
5. West Fork Poplar River near Bredette
6. Poplar River above West Fork

For the parameters of:

Parameter Group	Specific Parameters
Field	Streamflow, pH, temperature, turbidity, dissolved oxygen and specific conductance
Chemical	Calcium, magnesium, sodium, potassium, bacarbonate, carbonate, sulfate, chloride, fluoride, boron, silica, and iron
Nutrients	Total nitrite and nitrate, total phosphorus, total kjeldahl, nitrogen, and total ammonia.
Metals	Dissolved (aluminum. arsenic, beryllium, cadmium, chromium, chopper, lead. mercury, maganese, nickel, and zinc).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
☒	AGENCY STAFF (Intramural)	7	Cooper H. Wayman
☐	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		EPA - Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$3,650	76		June 1, 1976	June 30, 1977

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CSE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Definition of the Radon-222 Source Term from Uranium Mill Wastes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Donald W. Hendricks, Director
Dr. Robert F. Kaufmann
Mr. Richard L. Douglas
Mr. David E. Bernhardt
Mr. Joseph M. Hans, Jr.
Mr. Fred B. Johns

NAME AND ADDRESS OF APPLICANT INSTITUTION

Office of Radiation Programs, Las Vegas Facility
P.O. Box 15027
Las Vegas, NV 89114
Telephone: (702) 736-2969 Ext. 305
FTS: 595-2969

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A series of technical reports will be prepared summarizing the interrelations among radium content, moisture, and radon exhalation from mill tailings piles in a variety of climatological settings typical of pertinent areas in the United States. Principal thrusts include:

1. Extending the data base of spot, one-time radon exhalation measurements.
2. Examining the feasibility and demonstrating the use of digital modeling techniques to calculate the moisture flux in a variety of tailings piles.
3. Developing 1 and 2 in conjunction with climatological studies for subsequent input to airborne dispersion models.
4. Developing an improved method of calculating the radon source term and dose assessment in connection with mill wastes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR Donald W. Hendricks	DATE 10/8/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Donald W. Hendricks
☒	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION EPA, Region VIII
☐	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60,000	76	None	April 1974	September 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 186 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSF

TITLE OF PROJECT
Surface Coal Mine Report

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
John E. Hardaway, Chief, Research & Applications Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
EPA, Region VIII
1860 Lincoln Street
Denver, Colorado 80203

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A report showing aerial photography of existing surface mines in the NorthernGGreat Plains region is published. Data on each mine and a discussion of the characteristics of surface mines as well as the technique of aerial photography is presented.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☒ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	1 A	RESPONSIBLE ORGANIZATION EPA Region VIII, Denver

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	76		6/76	4/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
CSF

TITLE OF PROJECT
Survey of Fugitive Dust from Coal Strip Mines

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There has been little effort to date to determine the particulate emissions from a strip coal mine in the arid west. These emissions are significant, come from various points in the mining activity, and are estremely difficult to quantify.

This effort will entail a detailed site specific ambient monitoring program. Emissions will be estimated by use of a Gaussian diffusion model and the air quality and meteorological data collected.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER Cooper H. Wayman
☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	3	RESPONSIBLE ORGANIZATION EPA Region VIII

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$125,000	76		June 1, 1976	January 1, 1977

*Funds approximate not for citation.66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681-BCA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Effect of Oil on Tundra Thaw Ponds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John E. Hobbie, Ecosystem Center, Senior Scientist, 1/6 man-yr
Stanley I. Dodson, Dept. of Zoology, Assoc. Prof., Univ. Wisconsin, 1/12 man-yr
James F. Haney, Dept. of Zoology, Asst. Prof. Univ. N.H., 1/9 man-yr

NAME AND ADDRESS OF APPLICANT INSTITUTION
Marine Biological Laboratory
Woods Hole, Massachusetts, 02543

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The research will provide information on the effects of spills of crude oil on shallow thaw ponds in arctic Alaska. Both immediate and long-range effects will be measured.

Scientific Background For Study: Some information is available on the lethal effects of oil on freshwater plants and animals. Practically nothing is known of effects on a pond community where indirect effects, such as the removal of grazing pressure on plankton, will occur. Only a few tests have been made of sub-lethal effects such as reduction of reproduction rate. Nothing is known of oil effects on arctic ponds.

Proposed Procedure: A follow-up study will be made of an oil spill made in 1970 at Barrow, Alaska. Also, a new spill was made in 1975, and a series of small subponds of various sizes have also been treated. The amount of oil remaining in various fractions will be measured. The species composition, abundance, and productivity of phytoplankton, zooplankton, benthic animals, and bacteria will be followed. Also, the effect of oil on the growth of *Carex aquatilis*, a rooted aquatic plant, will be measured as well as the degradation rate of *Carex* litter with and without oil treatment.

Best Objects and Agents: The objects will be natural thaw ponds near Barrow, Alaska. Crude oil from Prudhoe Bay will be the agent tested.

Results to Date: The biota has almost completely recovered from the oil spill of 1970. The zooplankton are almost back to normal, but one group of benthic animals, *Tanytarsus* (Chironominae) are still absent. Zooplankton are the most sensitive organisms while the phytoplankton are little affected except for a species change from *Rhodomonas* to *Uroglena* and *Chlamydomonas*. In test

IDENTIFY [illegible] PROFESSIONAL SERVICE INVOLVED [illegible] dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR John E. Hobbie	DATE 26 Feb. 1976

FOR OFFICE USE ONLY

	SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER Clayton M. White
	AGENCY STAFF (Intramural)	2	RESPONSIBLE ORGANIZATION ERDA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

Funds Estimate* $70,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE April 1976	ESTIMATED COMPLETION DATE April 1978

*Funds approximate not for citation

[illegible] 169 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E681- BCA

TITLE OF PROJECT
Suspended Sediments and Related Limnology of an alpine lake system

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator .. Dr. Vera Alexander, Professor, University of Alaska*
Obher professional personnel ... Dr. R.J. Barsdate, Professor, Univ. of Alaska
Mr. J.C. Mellor, Naval Arctic Res. Lab., U. of A.
Dr. H.W. Denner, Director, NARL, Univ. of Alaska
*Institute of Marine Science: (907) 479-7210

NAME AND ADDRESS OF APPLICANT INSTITUTION
Institute of Marine Science,
University of Alaska
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The aim of this project is to assess sediment impact on arctic freshwater ecosystems, using as a natural labortaory Lakes Peters and Schrader in the Brooks Range to determine the utility of aerial assessment of sediment loads. These lakes exhibit a natural sediment load gradient since turbid water enters Lake Peters and flows through the system. Two field seasons have now been completed, with a detailed assessment of gradient photography currently underway. We also studied some aspects of the lake chemistry and productivity in order to deliniate possible impact of alterations in sediment load regime on arctic lakes in general. Microdensity techniques are being used on the film, and ground truth data are being evaluated. We also selected three additional lakes along the Trans-Alaska Pipeline corridor for photography, and are currently evaluating these results also. This project relates closely to a separate study on the effects of the pipeline road on freshwater environments, and the two studies will essentially merge in their objectives during the last field season.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Research Institute-Institute of Marine Science	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE October 12, 1976

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER Clayton White
	AGENCY STAFF *(Intramural)*	3.1 & 3.2	RESPONSIBLE ORGANIZATION Division of Biomedical & Environmental Research, USERDA
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
38	76	1	6/1/75	4/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681- BCA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Effects of Road Construction Upon Nearby Lakes in the Alaskan North Slope

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator ...Dr. Vera Alexander, Professor, University of Alaska*
Other Senior Personnel ... Dr. Michael C. Miller, Assoc. Prof. Univ. Cincinnati
Dr. John M. Miller, North Carolina State University
Dr. R.J. Barsdate, Professor, University of Alaska
*Institute of Marine Science: (907) 479-7210

NAME AND ADDRESS OF APPLICANT INSTITUTION

Institute of Marine Science,
University of Alaska,
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study is designed to determine the effects of road construction on lakes in northern Alaska, and is carried out along the new road associated with the Trans-Alaska Pipeline. This road has altered drainage patterns and thus caused the formation of new lakes, and has altered the sediment patterns. The effects of road dust and other atmospheric particulates as well as nutrient loading are being studied, all with respect to lattitudinal grandient. New bodies of water are being monitored with time to observe succession in water chemistry and biota. The effects of nutrient input are being studied in situ and with bioassay approaches. We expect to carry out one more field season on this work, having completed two to date. Additional work on determining the mineral and nutrient additions by dustfall and icefog will be carried out during the winter season, some of this information to be gained by using snow cores in early spring to give an integrated record of deposition. This information, along with summer experimental work, should help give an idea of the impact from such sources. New pond succession will continue to be a major focus of the work, and this work will intensify. Finally, the assesment of natural variations with latitude will be needed to separate normal gradients and the effects of the human activity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Research Institute - Institute of Marine Science	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE October 18, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Clayton White
☐	AGENCY STAFF (Intramural)	3.3	RESPONSIBLE ORGANIZATION Division of Biomedical & Environmental Research, USERDA
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40	76	1	6/1/75	4/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCC

TITLE OF PROJECT
TRACE METAL CYCLING & EFFECTS ON TERRESTRIAL ECOSYSTEMS IN THE SOUTHEASTERN UNITED STATES

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. H. Horton EED Staff Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Savannah River Laboratory, Aiken, SC 29801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives are to develop new and improved information on the trace metal content of coal, ash, fly ash, soil, vegetation, etc., as a basis for evaluating the cycling mechanisms for trace metals and to develop means of reclaiming abandoned ash basins. A study is in progress to determine the effect upon the terrestrial environment of trace elements released from a coal fired powerhouse from 1952 through 1975. Analyses of surrounding soil and vegetation are not complete but from results to-date the effects appear to be small. Stands of loblolly pine, sweetgum and sycamore trees have been successfully established on an ash basin abandoned in 1964. Survival and growth of the trees are better on the ashes than on soil, possibly due to a higher water content of the ashes during a severe drought.

During FY-77 analyses of the soil and vegetation will be completed. Groundwater and biological specimens will be analyzed for trace metals.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)

SIGNATURE OF PRINCIPAL INVESTIGATOR
J. H. Horton

DATE
10/6/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
David Ballantine

RESPONSIBLE ORGANIZATION
ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$130,000	1976	3	June 23, 1975	1980

EPA Form 5760-1 (7-72) REPLACES [illegible] WHICH MAY NOT BE USED

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Coal Ash Contaminants in Southeastern Aquatic Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Michael H. Smith, Director
John P. Giesy, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION
Savannah River Ecology Laboratory
Drawer E
Aiken, SC 29801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Trace contaminants from coal combustion include a number of toxic elements which are known to be concentrated by aquatic biota. Since the majority of the electrical power generated in states such as South Carolina is by coal combustion, large inputs of trace contaminants will be expected as a consequence of rapid population growth in the southeastern United States and projected increased dependence on fossil fuels. This area of the country may experience more problems with coal ash contaminants than other areas because of the generally higher availability of these elements in soft acid waters. The objective of these studies is to 1) determine if aerial and effluents from coal combustion increase levels of toxic elements in aquatic systems adjacent to power production facilities and 2) determine pathways and compartmentalization of trace contaminant flaxes in aquatic systems. Aerial inputs into a softwater pond are being monitored. Elemental ratios are used to determine if trace element inputs are from coal combustion or natural particulate inputs. Cycling of metals to all components of this low ionic strength, highly organic acid aquatic system has been determined. The hypothesis that aquatic systems act as sinks for metals and that metals bound to organics are mobilized from the drainage basin to the pond is being tested. Monitoring of aerial inputs is also being used to determine if electrostatic precipitators is capable of reducing trace metal inputs into this aquatic system. The second phase of this set of investigations is the fate of trace contaminants associated with coal in a swamp system. Areas receiving coal ash is being compared to central areas and trophic transfers water - periphyton - macroinvertebrates - fish are being conducted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Michael H Smith	10/12/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
2

PROJECT OFFICER
David Ballantine

RESPONSIBLE ORGANIZATION
ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$120,000	1976	1	June 1975	1978

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E681-BCC

TITLE OF PROJECT

"Ecological Fate and Effects of Trace Elements from Coal Utilization in The Semi-arid West"

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

LaMar J. Johnson, Group Leader; David R. Dreesen, Ernest S. Gladney, Lawrence E. Wangen, Caroline L. Wienke staff members
Subcontract to Arizona State University-Thomas H. Nash III, Miltor R. Sommerfeld

NAME AND ADDRESS OF APPLICANT INSTITUTION

Los Alamos Scientific Laboratory
P.O. Box 1663
Los Alamos, NM 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this research is to determine the ecological fate of trace elements resulting from the combustion of coal in semi-arid environments of the western United States. The mobilization of trace elements through stack emissions and coal ash disposal are to be investigated. Current plans call for the analysis of ambient particulate matter for trace element content as a function of particle size. Soils and vegetation are to be analyzed to ascertain the extent of trace element content due to deposition on surfaces and uptake from soils and water. The use of lichens as bioindicators of trace element pollution is being investigated. The adaptation of microbial populations to metals is being investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Health Division-Environmental Studies	SIGNATURE OF PRINCIPAL INVESTIGATOR Lawrence E Wangen	DATE 11/11/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER David S. Bellantine
	AGENCY STAFF *(Intramural)*	3	
C	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA
	RESEARCH GRANT		

Funds Estimate*	Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$105 000	76			July 1976

*Funds approximate not for citation. AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-681-BCC

TITLE OF PROJECT
Dynamics of trace elements in desert environments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Frederick B. Turner, Ph.D.	LNMRB	Research Biologist	(213) 8258773
Arthur Wallace, Ph.D.	LNMRB	Research Plant Physiologist	(213) 8253664
Wade L. Berry, Ph.D.	LNMRB	Specialist	(213) 8258774
Carl L. Strojan, Ph.D.	LNMRB	Postdoctoral Scholar	(213) 8258773

NAME AND ADDRESS OF APPLICANT INSTITUTION
Laboratory of Nuclear Medicine and Radiation Biology, University of California,
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The combustion of coal releases potentially toxic elements into the atmosphere. These are ultimately deposited on vegetation or the ground and incorporated into biogeochemical cycles. The purpose of this research is to determine natural storages and pathways and rates of transfer of trace elements (e.g., Cd, Ni, Cu, Co, Pb, Zn) in and between components of desert environments. Potential sites of accumulation will be identified. Field work is being carried out in southern Nevada--in the vicinity of Southern California Edison's Mohave Generating Station, and at the Nevada Test Site. Experiments are conducted at the University of California, Los Angeles. Amounts of trace elements in desert vegetation are being analyzed by emission spectroscopy. Trace elements in soils and animals are being measured by atomic absorption spectroscopy. Biological storages of elements are estimated by combining chemical analyses of plant and animal tissues with biomass estimates of desert populations. Greenhouse experiments with desert shrubs and soils amended with coal fly ash are designed to measure rates of uptake of trace elements, and how such elements are distributed in various plant tissues. Field experiments are in progress to determine rates at which plant litter decomposes and returns elements to the soil.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR
Frederick B Turner

DATE
Oct. 22, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
4

PROJECT OFFICER
David S. Ballantine

RESPONSIBLE ORGANIZATION
ERDA

Funds Estimate*
$130, 000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.

STARTING DATE
1976

ESTIMATED COMPLETION DATE
July 1977

*Funds approximate not for citation. 66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E681-BCC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Environmental Impact of Coal Ash on Tributary Streams and Nearshore Waters on Lake Erie

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Kenneth G. Wood, Biology Dept., State University College, Fredonia, New York 14063
Dr. David Dingledy, Dept. of Chemistry, SUC at Fredonia, Dr. Robert Fahnestock, Dept. of Geology, SUC at Fredonia, Dr. Walther Barnard, Dept. of Geology, SUC at Fredonia; Dr. Donal Crowley, Dept. of Geology, SUC at Fredonia

NAME AND ADDRESS OF APPLICANT INSTITUTION

State University College, Fredonia, New York 14063

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Leachate and runoff from coal wastes have been correlated with elevated Mn and Fe concentrations in streams and ponds at the site, and in associated aquatic invertebrates. The metals Cd, Zn, Cu, and Cr were found at low levels (ppb range) in the waters, and in variable, generally low concentrations in the biota.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 5

PROJECT OFFICER David S. Ballantine

RESPONSIBLE ORGANIZATION ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100 K	76			9/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 155-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E681-BCC

TITLE OF PROJECT
The Contamination of Groundwater by Heavy Metals from the Land Disposal of Fly Ash

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Thomas L. Theis - Assistant Professor of Civil Engineering 0.3 man-years
Dr. Jerry J. Marley - Associate Professor of Civil Engineering o.16 man-years

NAME AND ADDRESS OF APPLICANT INSTITUTION

Graduate School (University of Notre Dame)
Department of Civil Engineering, Notre Dame, Indiana 46556

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the proposed work is to define the aqueous chemistry of heavy metals associated with fly ash disposal systems. It has been demonstrated that many heavy and trace metals are concentrated on fly ash during the coal combustion process. Normal disposal practice for this material involves ponding or use directly as fill. Considering the amounts which must be disposed of (1975 estimate, 30-35 million tons), a potential contamination problem exists with local groundwaters.

Previous research conducted on this problem in the first year of study involved laboratory experiments in which the sorptive characteristics of the species As, Cd, Cr, Cu, Fe, Hg, Mn, Pb, and Zn associated with these systems was investigated. The coming year's effort will continue with these laboratory studies, however the main emphasis will be on field research on existing disposal sites. The procedures to be used will include monitoring through a well survey and a heavy metal tracer study using either a radioactive or inorganic source of the metals of interest. Laboratory data will be coordinated through a mathematical groundwater quality model to predict metal attenuation with distance from source. The model will be calibrated with laboratory leaching columns and through comparison with field data.

RESULTS TO DATE: Suggest that release of metals from fly ash in aqueous environments is dependent upon the presence, sorptive characteristics and concentration of various metal "sinks" associated with the ash (e.g.$Fe(OH)_3$, MnO_2, etc). Subsequent readsorption onto local soil matter is strongly pH dependent and is also a function of "sink" presence and concentration.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Thomas L. Theis	2/17/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 6

PROJECT OFFICER: David S. Ballantine

RESPONSIBLE ORGANIZATION: ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000	76			July 1976

*Funds approximate not for citation '66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E681-BCC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT The Development of Biological Indices for Identifying & Evaluation of Impacts of Pollutants on Freshwater Ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John Cairns, Jr., Univ. Distinguished Prof. of Zoology, Biology Dept., VPI&SU
Ernest F. Benfield, Ass't Prof. of Zoology, Biology Dept., VPI&SU
Arthur L. Buikema, " " " " " " "
Kenneth L. Dickson, " " " " " " "
Albert C. Hendricks and William H. Yongue

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dept. of Biology & Center for Environmental Studies
1020 Derring Hall
Virginia Polytechnic Institute & State University, Blacksburg, Va. 24061

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Structural responses of aquatic communities to pollutional stresses have historically been the principal methods by which biological assessment of environmental perturbations have been evaluated. While community structure responses are often of value, they do not give the investigator sufficient information to understand the impact of stresses on community dynamics, e.g., energetics and nutrient cycling.

The primary objective of this work is to examine a number of major functional processes common to most aquatic communities in terms of developing and evaluating techniques for measurement of those processes in terms of their suitability for pollutional stress assessment. A secondary objective of the work will be an attempt to relate data generated by examining functional aspects of communities with standard community structure measurements.

The general areas to be examined in the project include the following: 1) evaluation of functional indices to assess pollution effects on autotrophic and heterotrophic communities; 2) relationship of protozoan invasion and extinction rates to the eutrophication process; 3) responses of zooplankton subjected to cooling water entrainment; and 4) responses of detrital processing to pollutional stress. The research has been ongoing for approximately nine months and significant progress has been made in all areas of study.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John Cairns, Jr.	2/24/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	7	David S. Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

Funds Estimate*	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000	76			July 1976

*Funds approximate not for citation. 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
*EPA-IAG-D6-E681-B*CC

TITLE OF PROJECT
Numeric Information

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. L. Burgess
R. H. Strand and R. J. Olson
Environmental Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives - The overall objective is to provide numeric information processing and analysis support for the assessment and related regional studies being performed by the Oak Ridge National Laboratory for the Environmental Protection Agency to evaluate the effects of surface mine-land reclamation activities on freshwater resources.

Approach - Specific needs and approaches will be developed through continued interaction with investigators. Existing data will be acquired, edited, documented and stored in the Numeric and Textual Information System (NUTIS) developed by the Environmental Sciences Division. The Statistical Analysis System (SAS-76) will be used in conjunction with NUTIS to provide data management and statistical analysis capabilities. Our efforts will be coordinated with Argonne National Laboratory to minimize duplication and maximize compatability of data bases.

Current Plans/Progress - We are currently processing the USGS water quality/quantity tapes and have obtained air quality tapes. We are developing computer files describing toxic compounds potentially found in aquatic ecosystems. These files, derived from the literature, contain numeric information in tabular form and cover by element and organism the concommitant effects of environmental variables such as pH, hardness, alkalinity, temperature, DO, total dissolved solids and concentration of the compound. We have concurrent projects that are developing compatible county level environmental data bases for use by the EPA studies. Computer capabilities are being expanded in the area of graphical display.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
SIGNATURE OF PRINCIPAL INVESTIGATOR Richard J Olson
DATE 10/12/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 8
PROJECT OFFICER David S. Ballantine
RESPONSIBLE ORGANIZATION ERDA

Funds Estimate* $50,000
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
STARTING DATE
ESTIMATED COMPLETION DATE June 1977

*Funds approximate not for citation. 66 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E772-BCV

TITLE OF PROJECT
The Physiological Effects of Arsenic, Cadmium, and Copper on Marine Shellfish

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: David W. Engel, Ph.D., National Marine Fisheries Service
Project Officer: B'.A. Fowler, Ph.D., NIEHS

NAME AND ADDRESS OF APPLICANT INSTITUTION

Nat' l Institute of Environmental Health Sciences, P.O. Box 12233, Res. Tri. Park, N.C.
27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study was undertaken to determine the physiological, biochemical, and ultrastructural effects of arsenic, cadmium, and copper on tissues of marine shellfish in comparison with those previously observed in mammals. Large numbers of shellfish will be exposed to these elements for subsequent incorporation of freeze-dried shellfish meats into rat diets for evaluation of pharmacokinetic and toxicological differences in comparison to similar doses of these metals administered in drinking water. At this stage, a suitable sea water system has been developed for dosing of oysters with cadmium (410 ppm) and copper (360 ppm) were found in freeze-dried meats of these animals indicating a much faster and greater capacity for cellular accumulation of these elements than is known to exist in mammals. During the next year, glucose metabolism and oxygen consumption in similarly dosed oysters will be studied.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* X AGENCY STAFF *(Intramural)* X NEGOTIATED CONTRACT RESEARCH GRANT	TASK NO. 8.1	PROJECT OFFICER Dr. Larry G. Hart RESPONSIBLE ORGANIZATION NIEHS	
FUNDS OBLIGATED $109,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 0	STARTING DATE 7/75

ESTIMATED COMPLETION DATE
1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0051* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E772-BCV

TITLE OF PROJECT
Metabolism of Hydrocarbon Isomers in Vertebrate and Invertebrate Marine Species

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John R. Bend, Ph.D., Head, Marine Pharmacology and Biomedicine Section, Pharmacology Branch (Principal Investigator); Margaret O. James, Ph.D., Marine Pharmacology and Biomedicine Section, Pharmacology Branch; Robert P. Weatherby, Ph.D., Marine Pharacology and Biomedicine Section, Pharmacology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Nat'l Institute of Environmental Health Sciences, P.O. Box

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The in vitro metabolism of selected hydrocarbons, which are constituents of crude or refined petroleum products, will be studied in marine species indigenous to Florida and Maine. Special attention will focus on benzo(a)pyrene, a polycyclic aromatic hydrocarbon associated with chemical carcinogenesis and mutagenesis. The enzyme systems responsible for alkene oxide and arene oxide biotransformation will also be studied (in vitro) in hepatic and extrahepatic tissues of marine species from Florida and Maine. The effects of preexposure of marine animals to chemical pollutants associated with petroleum on the subsequent uptake, distribution, metabolism (in vivo and in vitro) and excretion of selected hydrocarbons including octane, hexadeccane and benzo(a)pyrene will also be studied and compared to similar investigations in untreated animals.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☒ AGENCY STAFF *(Intramural)* ☐ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 8.2	PROJECT OFFICER Dr. Larry G. Hart RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$70,000	76	0	7/75	1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA EPA-IAG-D6-E772-BCV

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJ Carcinogenic Effects of Petroleum Hydrocarbons on Selected Marine and Estuarine Organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John R. Bend, Ph.D., Visiting Scientist, Pharmacology Branch
Bruce A. Fowler, Ph. D., Senior Staff Fellow, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P. O. Box 12233, Res. Tri. Park, N. C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pre-metamorphic and post-metamorphic forms of a selected flatfish species, that has been demonstrated to develop epidermal papillomas, will be exposed to benzo(a)pyrene and possibly some of its electrophilic derivatives and the incidence of papillomas in the exposed animals will be assessed. Control groups will be included for each exposed group in the study. The histopathology of tumors occurring in both exposed and control groups will be assessed comprehensively. Benzo(a)pyrene hydroxylase activity will be measured in hepatic microsomes prepared from both control and exposed fish, with and without epidermal papillomas, that survive until sacrifice (10-12 months of age). This project will be done on a research contract. The proposals have been ranked and those with the highest scores have been site visited. An award will be made by November, 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
SIGNATURE OF PRINCIPAL INVESTIGATOR
DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO. 8.3
PROJECT OFFICER Dr. Larry G. Hart
RESPONSIBLE ORGANIZATION NIEHS

FUNDS OBLIGATED $45,000
F.Y. 76
NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y. -0
STARTING DATE 7/75
ESTIMATED COMPLETION DATE 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D6-E593-BEN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Environmental Assessment of Northern Puget Sound and the Strait of Juan de Fuca

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Howard S. Harris, Project Manager
Environmental Research Laboratories/NOAA
3711 15th Ave., N. E.
Seattle, WA 98105
Phone: (206) 442-0199
FTS 399-0199

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA
Rockville, MD 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is designed to provide the ecological data required for making management decisions concerning regional development and for assessing the potential impact of petroleum hydrocarbons on the ecosystem. The results of this research will be immediately applicable to decisions on the location of deepwater ports, expansion of refinery capacity at existing sites verses the development of new sites, and the regulation of tanker traffic in parts of the sound.

Investigations will be based on existing ecological and environmental data augmented by field and laboratory investigations. Priority will be given to evaluating the ecological factors at risk from the instantaneous release of a large volume of oil. Second priority will be given to the ecological factors at risk from the chronic effects associated with transport, transfer, and processing of oil and oil products. Output products will include: (1) description of existing ecological and environmental conditions, (2) the present occurrence and variability of petroleum related pollutants, (3) a state-of-art oil spill trajectory model for northern Puget Sound and the Strait of Juan de Fuca, and (4) an ecosystem model to provide prediction of fate and effects of selected pollutants on components of the marine ecosystem.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*: N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR: Howard S. Harris

DATE: 28 Sept. 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☒ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 1-4

PROJECT OFFICER: John W. Townsend, Jr.

RESPONSIBLE ORGANIZATION: NOAA/ERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$920K $230K	76 76TQ	3	1 Sept. 1975	1 Sept. 1980

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E693-BEO

TITLE OF PROJECT
Environmental Assessment of an Active Oil Field in the Northwestern Gulf of Mexico 1975-1980

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Joseph W. Angelovic, Gulf Coastal Fisheries Center (GCFC), Galveston, Texas, Project Manager. Phone: (713) 763-1211, Ext. 501

Dr. Richard J. Barry, GCFC, Galveston, Texas, Project Coordinator, Phone: (713) 763-1211, Ext. 532

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Marine Fisheries Service
Gulf Coastal Fisheries Center
4700 Avenue U
Galveston, Texas 77550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A detailed 5-year environmental assessment study of the Buccaneer oil and gas field was initiated in April 1976. The Buccaneer Field is about 30 miles south of Galveston, Texas, and is relatively isolated from other gas and oil wells. It includes two production platforms and 13 satellite platforms. The field has produced both gas and oil since 1963. The objectives of the study are: to describe the existing ecosystems and areal distribution of their major components; to compare the concentrations of pollutants in the sediments, water, and biota of the oil field with those in an unaltered area; and to identify changes that have occurred. The project is making use of historical and new data to describe and quantify the biological, chemical, and physical characteristics and the temporal variations of these characteristics in the environments of the oil field and the control area. Surveys have been initiated to describe the hydrography, water quality parameters, sediments, pollutants, and the abundance, distribution, diversity and habitat of major planktonic, benthic, and pelagic communities.

Principal Investigators:
Mr. K. Neal Baxter, GCFC, Galveston, Demersal Finfishes - AC713 763-1211, Ext. 526
Mr. John H. Finucane, GCFC, Panama City, Fla., Ichthyoplankton - AC904 234-6541
Dr. W. Lee Trent, GCFC, Panama City, Fla., Pelagic and Reef Fish - AC904 234-6541
Dr. Nick Fotheringham, Dept. of Biology, Univ. Houston, Houston, Tex., Effects of Oil Field Structures - AC713 749-1763
Dr. Brian S. Middleditch, Dept. of Biophysical Science, Univ. Houston, Houston, Tex., Hydrocarbons - AC713 749-4845/2801
Dr. John B. Anderson, Dept. of Geology, Rice Inst., Houston, Tex., Sediments and Trace Metals - AC713 527-4884
Dr. Donald E. Harper, Dept. Mar. Sci., Texas A&M Univ., Galveston, Tex., Benthos - BC713 744-7161, Ext. 242
Dr. E. William Behrens, Mar.Sci.Inst.,Tex.Univ.,Pt.Aransas, Tex., Total Organics - AC512 749-6745

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* National Marine Fisheries Service Gulf Coastal Fisheries Center	SIGNATURE OF PRINCIPAL INVESTIGATOR Richard J Barry Richard J. Barry	DATE 9/24/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER John W. Townsend, Jr.
X	AGENCY STAFF *(Intramural)*	1-6	
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION NOAA
	RESEARCH GRANT		

FUNDS OBLIGATED $455,000 176,000	F.Y. 76 76TO	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 3	STARTING DATE 1 Sept. 1975	ESTIMATED COMPLETION DATE 1 Sept. 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-BDO

TITLE OF PROJECT Field & Filt/Unfilt Field Exposure Chamber Studies of the Effects of Coal-Fired Power Plant Emissions on Crop & Forest Species of Economic Impt. in SE US

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
Norman L. Lacasse (Principal Invest.), Biologist
N. T. Lee and C. McDuffie, Biologists

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These studies are aimed at characterizing under field conditions the relationships of pollution dose and effects on foliar appearance, growth, and yield of selected crop and forest species (including soybeans, wheat, cotton, and Virginia pine). Both field plots and field exposure chambers are being utilized in the studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Norman L. Lacasse

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
X NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED
150 K

F.Y.
1976

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
3

STARTING DATE
5/7/75

ESTIMATED COMPLETION DATE
5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 16A AND SSIE 16A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721- BDO

TITLE OF PROJECT Dose-Response Kinetics for Effects of Atm. Emissions from Coal-Fired Pr. Plants on Soybeans & Other Crop & Forest Sp. of Ec. Impt. in the SE US.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
Norman L. Lacasse (Principal Invest.), Biologist
N. T. Lee, C. McDuffie, & F. P. Weatherford,
Biologists

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data.) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The studies involve acute and chronic controlled exposure studies of the effects of SO_2, NO_2, O_3, and combinations of these pollutants on the growth and/or yield of soybeans, cotton, wheat, and Virginia pine grown and exposed under several environmental regimes. Responses measured include visible injury, growth, yield, respiration, and photosynthesis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Norman L. Lacasse

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
2.

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED
45 K

F.Y.
1976

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
3

STARTING DATE
5/7/75

ESTIMATED COMPLETION DATE
5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA IAG-D6-E721-**BDO**

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Transfer, Fate, and Effects of SO_x, NO_x, and Acid Precipitation on a Terrestrial Ecosystem Representative of the Tennessee Valley Region

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
J. M. Kelly (Principal Invest.), Biologist
J. C. Noggle, Biologist

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Ala 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority, E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of these studies is the characterization and quantification of the transfer, fate, and effects of SO_x, NO_x, and acid precipitation on forested ecosystems typical of the Tennessee Valley. Field studies include the development of sulfur and nitrogen budgets for forested watersheds including measurements of wet and dry atmospheric input. An acid rain simulator system has been developed and is being utilized to evaluate plant and soil response to various precipitation pH levels.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
J.M. Kelly

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
3

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
184K	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-BDO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Beneficial Effects of SO_2 Emissions from Coal-Fired Power Plants on Crop and Forest Species

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director), Supv.,
Air Quality Research Section
J. C. Noggle (Principal Invest.), Biologist

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION
Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study will involve the evaluation of economic benefits of sulfur deposition from the atmosphere on crop and forest species. Techniques for measuring SO_2 transfer from the atmosphere to the terrestrial ecosystem will be investigated in the vicinity of a large coal-fired steam plant. Accumulation of sulfur in soils at various distances from coal-fired steam plants will be measured.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	J C Noggle	9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
☐	AGENCY STAFF *(Intramural)*	4	Herbert C. Jones, III
☒	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐	RESEARCH GRANT		Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
44 K	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
CPA
EPA-IAG-D6-E721-**BDP**

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Fate & Effects of Atmospheric Emissions from Cooling Systems on Terrestrial Habitats

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III (Project Director),
Supv., Air Quality Research Section
J. M. Kelly (Principal Invest.), Biologist
Danna Baird, Biologist

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS 872-8342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning
Air Quality Research Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This investigation is aimed at identifying and characterizing the effects of atmospheric releases from mechanical and natural draft cooling towers. Measurements include (1) wet and dry deposition of toxic chemicals, their accumulation in and effects on soil and vegetation, (2) impacts of moisture on growth and/or yield of selected crop and timber species and incidence of disease.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
J. M. K

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Herbert C. Jones, III

RESPONSIBLE ORGANIZATION
Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
67 K	1976	3	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY NOTICE OF RESEARCH PROJECT	*Form Approved* *OMB No. 158-R0081* PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E721-BDQ

TITLE OF PROJECT

Ecological Recovery after Reclamation of Toxic Spoils Left by Coal Surface Mining

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Thomas G. Zarger (615) 632-4411
Joe B. Maddox
William M. Seawell

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development, Norris, Tenn. 37828

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To determine the rate of recovery of a damaged ecosystem in response to intensive remedial treatment of a problem surface mine. The project involves a problem watershed in which 400 acres of forested land were disturbed by coal surface mining in the early 1970's. Unsuccessful reclamation efforts resulted in adverse environmental impacts within an 11-square mile watershed that includes a city water supply reservoir. Approach & Plans: Project objectives will be accomplished by applying intensive remedial land treatments & evaluating their effectiveness by measuring the degree of recovery of the affected terrestrial & aquatic ecosystems. Environmental data collected during the period of mining & early reclamation effort will serve as initial baseline study data. Monitoring (soil, vegetation & receiving stream ecology) is being conducted through treatment & will be continued thereafter on a more limited basis as long as significant recovery is noted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE 10/13/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER Thomas G. Zarger
☒	AGENCY STAFF *(Intramural)*	1 -4	RESPONSIBLE ORGANIZATION TVA
☐	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED $70,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE 7/1/75	ESTIMATED COMPLETION DATE 1/31/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-BDR

TITLE OF PROJECT
INFORMATION SYSTEMS DEVELOPMENT

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. John S. Crossman, Biologist, Water Quality and Ecology Branch (Principal Invest.)
James R. Wright, Jr., Biologist, Water Quality and Ecology Branch (Research Invest.)

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to develop the capability to measure and evaluate existing and anticipated environmental impacts of energy-related technologies on important biotic assemblages in the aquatic environment.

To accomplish this objective, representative data sets have been tested using various analytical techniques. The techniques considered include correlation, distance and association coefficient matrices, diversity indices, and various cluster and ordination analyses. Two other short-term projects were undertaken as part of this task--a hierarchical diversity study and a similarity coefficient study to determine what coefficient(s) should be used when clustering biological data from stream surveys.

With the completion of the data evaluation, species associations will be identified for additional laboratory and field studies to determine their functional role in the environment. This information will subsequently be used to adapt or create statistical and/or ecosystem simulation models in order to accomplish the stated objective.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Not Applicable	SIGNATURE OF PRINCIPAL INVESTIGATOR W.R. Nicholas for John S. Crossman	DATE September 27,1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER W. R. Nicholas, Chief, Water Quality & Ecology Branch
☐	AGENCY STAFF *(Intramural)*	1	RESPONSIBLE ORGANIZATION Tennessee Valley Authority
☒	NEGOTIATED CONTRACT		
☐	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
57,000	76	3.0	5/7/75	5/6/80

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D6-E721-BDR

TITLE OF PROJECT

ACUTE THERMAL EFFECTS, AQUATIC INSECTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Richard D. Urban, Biologist, Water Quality and Ecology Branch (Principal Invest.)
Dr. Kenneth J. Tennessen, Biologist, Water Qual. and Ecol. Branch (Research Invest.)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to provide data on the acute effects of thermal plume entrainment on aquatic insects.

Concern has been expressed that if drifting insects cannot successfully negotiate passage through thermal plumes, the aquatic insect populations upstream of a steam-electric station will be depleted as well as those downstream. Acute thermal effects studies on freshwater insects will be conducted at representative TVA steam-electric stations (Johnsonville, Cumberland, Gallatin, Bull Run, and John Sevier) and supplemented by laboratory studies.

This study will add a new dimension to the existing aquatic ecological program. Data from ongoing 316(a) studies serve as the bases for species selection and study site location. The species selected for initial evaluation are the burrowing mayfly, *Hexagenia bilineata*, and the chironomid midges, *Chironomus* spp. and *Coelotanypus* spp.

Laboratory colonies of the aforementioned species have been established. *Hexagenia bilineata* eggs have been incubated at different temperatures to assess the effect on development time. Thermal tolerance and the effect of acclimation on tolerance of immatures and eggs for each species will be determined by bioassay. Field studies on population parameters in thermal and ambient areas will be conducted along with studies on drift.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Not Applicable	SIGNATURE OF PRINCIPAL INVESTIGATOR Richard D. Urban Richard D. Urban	DATE September 28, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	W. R. Nicholas, Chief, Water Quality & Ecol. Branch
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
79,000	76	3.0	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E7 21-BDR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
BIOCHEMICAL METHODOLOGY, AQUATIC THERMAL IMPACTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Sylvia A. Murray, Biologist, Water Quality and Ecology Branch (Principal Investigator)
Colette G. Burton, Biologist, Water Quality and Ecology Branch (Research Investigator)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to investigate thermal impacts on bluegills as measured by physiological and biochemical changes in the blood. Our approach is to subject the fish to various thermal plume conditions associated with constant and oscillating background temperatures. Peripheral blood from the caudal peduncle is used for morphological and chemical analyses, including microanalysis of the chemical constituents of the plasma.

We have worked out most of our analytical methods on available fish--viz, catfish, goldfish, and bluegills. Currently, we are studying population density effects on these fish to establish carrying capacities for maintaining and culturing fish for our thermal experimental work. To date, we have obtained data on catfish and goldfish and have initiated similar studies on bluegills. The data are currently being reduced for statistical analyses. In addition, we are setting up our baseline studies on bluegills to characterize the blood.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) Not Applicable	SIGNATURE OF PRINCIPAL INVESTIGATOR Sylvia A. Murray Sylvia A. Murray	DATE September 27, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one) ☐ AGENCY STAFF (Intramural) X NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 3	PROJECT OFFICER W. R. Nicholas, Chief, Water Quality & Ecol. Branch RESPONSIBLE ORGANIZATION Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
53,000	76	3.0	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY **NOTICE OF RESEARCH PROJECT**	*Form Approved* *OMB No. 158-R0081*
	PROJECT NO. *(Do not use this space)* SSIE
PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE	EPA EPA-IAG-D6-E721-BDR

TITLE OF PROJECT

BIOMONITORING, MOLLUSKS, AND OTHERS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Billy G. Isom, Biologist, Water Quality and Ecology Branch (Principal Investigator)
Charles Gooch, Biologist, Water Quality and Ecology Branch (Research Investigator)
Larry T. Neill, Biological Aide, Water Quality & Ecology Branch (Research Investigator)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to quantify the role of bioaccumulation in cycling of trace elements (selected metals and radionuclides) released to aquatic ecosystems by energy technologies (coal combustion and nuclear steam-electric stations).

Studies have been conducted over the past several years on mollusk population species distribution in Tennessee Valley reservoirs in proximity to coal combustion and operational nuclear facilities. We have a limited knowledge of the use of mussels and macroinvertebrates as biological monitors of metals and organochemical species.

We have considerable background literature on toxicity of power plant chemicals to aquatic life. This research will further evaluate the use of mollusks and other invertebrates for monitoring bioaccumulation in the aquatic environment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not Applicable	Billy G. Isom	September 27, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	8	W. R. Nicholas, Chief, Water Quality & Ecol. Branch
XX	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
63,000	76	3.0	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0091

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721- EDR

TITLE OF PROJECT
EVALUATE WATER INTAKE, ZOOPLANKTON ENTRAINMENT

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Richard D. Urban, Biologist, Water Quality & Ecology Branch (Principal Invest.)
Donald L. Dycus, Biologist, Water Quality & Ecology Branch (Research Investigator)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Division of Environmental Planning
Water Quality and Ecology Branch
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the research project is to determine the best type of intake design to mitigate deleterious effects to the zooplankton community of a water body. To accomplish this goal, several different types of intake designs and sitings of these intakes will be evaluated as to the rate of entrainment, the percentage of the community entrained, and the possible effects of the entrainment upon the community. The results of this research will permit a description of zooplankton distribution in response to naturally occurring phenomena (e.g., currents, thermal stratification, pressure changes induced by objects in the water column, etc.) to be made. By knowing these responses, criteria can be developed for use in designing and locating intakes which will minimize the entrainment of zooplankton.

Specific studies will generally conform to the following format. The horizontal and vertical distribution of the organisms in a water mass upstream of the intake, at the intake, and downstream of the intake zone will be determined (i.e., the same water mass). In addition, temperature, current direction, and current velocity data for various depths will be collected. A second phase will be to assess in the laboratory the avoidance behavior of zooplankton to currents and pressure changes resulting from different-shaped objects placed in the water column.

Entrainment effects (316b) studies were initiated in 1974 at eleven TVA fossil-fueled steam-electric stations. Data from these studies have been used as guides for selecting appropriate study sites. Intake evaluation will be conducted at Gallatin, Johnsonville, Bull Run, Browns Ferry, and Colbert steam-electric stations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* Not Applicable	SIGNATURE OF PRINCIPAL INVESTIGATOR Richard D. Urban	DATE September 28, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 9

PROJECT OFFICER: W. R. Nicholas, Chief, Water Quality & Ecol. Branch

RESPONSIBLE ORGANIZATION: Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
67,000	76	3.0	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D6-E764 78 BED

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Assessment of impacts of mining and airborne pollutants on forest, range, and related freshwater ecosystems.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Coordinated studies by Forest Service Research scientists underway at several locations in the West, Northern Great Plains, and East being conducted by: Director, Rocky Mountain Forest and Range Experiment Station, 240 West Prospect Street, Fort Collins, Colorado 80521, (303) 484-6270; Director, Intermountain Forest and Range Experiment Station, 507 25th Street, Ogden, Utah 84401, (801)399-6361; (continue on attached sheet)

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Department of Agriculture
12th & Independence Ave., S.W.
Washington, D.C. 20250

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Assess quality of water in water bodies in strip-mined areas as it relates to habitat for aquatic organisms and wildlife species associated with these water bodies.

2. Assess technologies for redepositing and stabilizing mine spoils to include identification of technologies that will keep water quality within acceptable limits for aquatic organisms and associated wildlife species.

3. Assess effects of mining-related transportation systems on water, air, soil, plant, animal, and esthetic resources.

4. Develop operational technical information system for reclamation of lands affected by mining.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA		9-13-76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	1-4	R.Z. Callaham R.Z. Callaham
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Forest Environment Research, Forest Service, USDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$583,000	76	Three	1975	1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Continues from Page 1

Give Names, Departments, and Official Titles of Principal Investigators or Project Directors and all other Professional Personnel Engaged in the Project.

and Director, Forest Environment Research Staff, 12th & Independence Ave., S.W., Washington, D.C. 20250, (703) 235-1071.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA BFO

TITLE OF PROJECT
Resource Inventory, Monitoring and Analysis System (RIMAS)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Nelson, William C., Assoc. Prof., Agricultural Economics, Principal Investigator
Johnson, Jerome E., Professor, Agricultural Economics
Barker, William T., Assoc. Prof., Botany
Omodt, Hollis W., Professor, Soils

NAME AND ADDRESS OF APPLICANT INSTITUTION
Agricultural Experiment Station
North Dakota State University
Fargo, ND 58102

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Expand the Resource Inventory, Information Management and Monitoring System (RIMS) by adding coal related natural resource, socioeconomic and environmental information and adapting the General Environmental Model (GEM) to interact with RIMS. Simulate impacts of coal development by geographic areas and provide decision makers with information on potential impacts. Data required to operate GEM on the North Dakota coal area will be obtained from other research projects and some secondary sources. Baseline data will be inputted and stored in RIMS. Linkages will be constructed to transfer data from RIMS to GEM. GEM will be selectively modified and tested against other impact projects to accurately represent the North Dakota coal area. The final phase will simulate coal development impacts upon the land, people, economy and government in the area under varying conditions.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*
Agricultural Experiment Station

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
10/5/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
M. L. Wilson

RESPONSIBLE ORGANIZATION
CSRS-USDA

FUNDS OBLIGATED
220K

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
2

STARTING DATE
5/76

ESTIMATED COMPLETION DATE
6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
BFO

TITLE OF PROJECT
Resource Inventory, Monitoring, and Analysis System—Phase II

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Nelson, William C., Assoc. Prof., Agricultural Economics, Principal Investigator
Johnson, Jerome E., Professor, Agricultural Economics
Barker, William T., Assoc. Prof., Botany
Omodt, Hollis W., Professor, Soils

NAME AND ADDRESS OF APPLICANT INSTITUTION

Agricultural Experiment Station
North Dakota State University
Fargo, ND 58102

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Expand the analytical capabilities of RIMAS to estimate impacts of energy transmission corridors and impacts of alternative settlement patterns upon community services and transportation systems. Adapt and apply composite mapping to analyze energy development impacts on land use and cover; and to identify areas where mining will have minimum negative effects. A computerized simulation model will be used to predict transmission corridor and settlement patterns and their impacts, the predictions will be compared to other analyses and to reality, and the model will be modified as necessary to achieve accurate and useful results. Soils, vegetation, coal overburden, ground water and other characteristics will be digitized and used as inputs to a composite mapping system to identify potential mining areas and monitor land use changes due to coal development.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Agricultural Experiment Station		10/5/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	1	M. L. Wilson
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☐ RESEARCH GRANT		CSRS-USDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$220K	76	2	5/76	6/78

EPA Form 5760-1 (7-72)   REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

E. INTEGRATED ASSESSMENT

E. INTEGRATED ASSESSMENT

TABLE OF CONTENTS

Integrated Assessment

Agency	Page
EPA	332-341
TVA	342-345
USDA	346

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA CCC

TITLE OF PROJECT
Geothermal Systems/Environmental Assessment of Extraction, Conversion & Waste Disposa

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Donald B. Gilmore - Project Officer	MSA/EMSL-LV
Alan Crockett - Principal Investigator	MSP/EMSL-LV
William Sutton - Principal Investigator	MSE/EMSL-LV

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Environmental Protection Agency,
Environmental Monitoring and Support Laboratory, P. O. Box 15027,
Las Vegas, NV 89114.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To evaluate the effect of geothermal resource development derived pollutants on the local species; to furnish information for an integrated monitoring system around any geothermal resource development.

Approach: Samples from plants and animals in the vicinity of geothermal development areas are being analyzed on a quarterly basis and are being compared to control areas. Effect of geothermal pollutants will be noted and included as a part of the total monitoring strategy.

Current Plans: Initial sampling has been done. Extractions and analyses are in the process of completion. Sampling and analyses are contemplated on a quarterly basis with quarterly letter progress reports and annual reports covering conclusions as well as recommendations for the succeeding year's activities.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) NONE	SIGNATURE OF PRINCIPAL INVESTIGATOR Donald B. Gilmore	DATE 9/28/76

FOR OFFICE USE ONLY

	SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	1	Donald B. Gilmore
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		MSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$198.5K	76	4	3/76	3/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA CCC

TITLE OF PROJECT
Geothermal Systems/Environmental Assessment of Extraction, Conversion, and Waste Disposal

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Tsvi Meidav, Principal Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Geonomics, Inc.
3165 Adeline Street
Berkeley, CA 94703

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: A guideline document will be developed for the multimedia monitoring strategy around any geothermal resource development. A handbook of referenced geothermal sampling techniques and sample analyses will be developed.

Approach: A contractor has been selected to adapt a previously developed groundwater monitoring strategy to geothermal resource developments. The East Mesa Area of the Imperial Valley, California, has been selected. All background data involving geology, hydrology, effluent constituents, ongoing groundwater monitoring programs, and resource developments and possibilities will be collated into a beginning report. The groundwater monitoring strategy will be developed and implemented.

Current Plans: Collection of baseline data has been started. Implementation of monitoring is expected to begin about 6/77.

ENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, ntal, etc.)*: NONE

SIGNATURE OF PRINCIPAL INVESTIGATOR:

DATE: 9/28/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.: 1

PROJECT OFFICER: Donald B. Gilmore

RESPONSIBLE ORGANIZATION: MSD/EMSL-LV

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$201.5K	76	4	9/76	9/81

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 26A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CCC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Site Engineering and Waste Management for Radioactive Waste Burial Facilities Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. David Ross
SCS Engineers
4014 Long Beach Blvd.
Long Beach, CA 90807 (213) 426-9544

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Environmental Protection Agency, Office of Radiation Programs-Las Vegas Facility,
P.O. Box 15027, Las Vegas, Nevada 89114.
(702) 736-2969 ext. 305 FTS: 595-2969 ext. 305

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor shall summarize and discuss engineering and water management practices that minimize the infiltration of precipitation into trenches containing radioactive waste. Using literature surveys and inhouse expertise, the contractor shall summarize proven practices, proposed studies, and pilot demonstration projects. The contractor's expertise shall be required to synthesize and to apply this data base to the shallow land burial of containerized (drums, boxes, etc.) radioactive waste.

Specific efforts shall be directed toward, but not limited to, the following topics:

a. Trench and trench cap design
b. Backfilling and compaction requirements
c. Site erosion control and revegetation
d. Relative costs of implementing alternatives for items 1-3
e. Methods to evaluate the site water budget

Supportive conclusions shall be supplied by the contractor as to which practice or combination of practices in the long run, will result in minimal water saturation of waste and maximum surface stabilization so as to minimize perpetual care and maintenance. This shall be accomplished by applying:

1. Contractor expertise and rationale to evaluate the practices/methods described, and
2. Case histories or recent research results

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR MF OConnell	DATE 10-8-76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER	Michael F. O'Connell (702) 736-2969 ext.305
☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	1	RESPONSIBLE ORGANIZATION	U.S. EPA, ORP-LVF, P.O. Box 15027, Las Vegas, Nevada 89114

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$18.4K	76	None	October 10, 1976	July 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CSD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Integrated Assessment of Coal Lease Areas in the Western United States

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Not Yet Awarded.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The steady evolution of a new Federal Coal Leasing Program, the lifting of an injunctio against mining plan approvals in the Eastern Powder River Basin as well as demands for moderate cost energy fuels such as low sulfur coals, are all facts which are placing unique environmental pressures on the coal resources of the Western United States. There is a need for a systematic, uniform and representative classification of developable coal areas where diverse impacts on the human environment may occur, especially in light of the role of "calls for nominations" for coal lease tracts (see Federal Register, Vol 41, #52, pp 11035-7). It is the intent of this effort to design and to apply to the degree possible with existing data an environmental ranking of leased lands and of representative Known Coal Leasing Areas. Such a ranking will assist in identifying areas that, if mined, will provide substantial challenges to protedt the water resources, air resources, and other resources with which coal development competes.

The purpose of this effort is to test and apply a reasonably implemented methodology that facilitates a geographical comparison of environmental impacts that would occur if western coal were surface-mined using readily available input data for comparison. No field measurements are supported by this effort.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☐ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 1	PROJECT OFFICER Cooper H. Wayman RESPONSIBLE ORGANIZATION EPA-Region VIII

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50K	76		4/76	8/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

PROJECT NO. *(Do not use this space)*
SSIE
EPA CTA

TITLE OF PROJECT
Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator
Professor Hugh T. Spencer
Associate Professor of Engineering
University of Louisville
Louisville, Kentucky 40208

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Louisville
Louisville, Kentucky 40208

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities (i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilities; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable effects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its inter-relationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Environmental Engineering Speed Scientific School	Hugh T. Spencer by Lowell Smith	July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	5D	Lowell Smith
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☒ RESEARCH GRANT		Office of Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$55,888	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
CTA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Co-Principal Investigators:
Professor Donald A. Blome
Professor James E. Jones, Jr.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Kentucky
Lexington, Kentucky 40506

SUMMARY OF PROPOSED WORK – (1) Objectives. (2) Approach. (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities (i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilities; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable affects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its interrelationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
Institute for Mining and Minerals Research

SIGNATURE OF PRINCIPAL INVESTIGATOR
Donald A. Blome
by Lowell Smith

DATE
July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.
5D

PROJECT OFFICER
Lowell Smith

RESPONSIBLE ORGANIZATION
Office of Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$70,060	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CTA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Co-principal Investigators:

Professor James S. Stukel
Director Office of Energy Research

Professor Boyd R. Keenan
Professor, Dept. Political Science

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Illinois
Urbana, Illinois 61801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities (i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilities; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable effects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its interrelationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Civil and Mechanical Engineering Department of Political Science	James S. Stukel By Lowell Smith	July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	5D	Lowell Smith
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☒ RESEARCH GRANT		Office of Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$163,495	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 186 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CTA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Co-Principal Investigators:

Professor Robert E. Bailey Assistant Head of Interdisciplinary Engineering Studies	Professor J. C. Randolph School of Public and Environmental Affairs

NAME AND ADDRESS OF APPLICANT INSTITUTION

Purdue University West Lafayette, Indiana 47907	Indiana University Bloomington, Indiana 47401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities(i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilities; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable effects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its interrelationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Nuclear Engineering School of Public and Environmental/Affairs	Robert E. Bailey by Lowell Smith	July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*
☐ AGENCY STAFF *(Intramural)*
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.
5D

PROJECT OFFICER
Lowell Smith

RESPONSIBLE ORGANIZATION
Office Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$145,964	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA CTA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:
Professor Ross J. Martin, Director,
Engineering Experiment Station
Professor of Mechanical Engineering

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities(i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilicies; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable effects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its interrelationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Engineering	Ross J. Martin by Lowell Smith	July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
☐ AGENCY STAFF *(Intramural)*	5D	Lowell Smith
☐ NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
☒ RESEARCH GRANT		Office of Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$188,305	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
CTA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ohio River Basin Energy Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator:
Professor Robert C. Stiefel
Director,Water Resources Center

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ohio State University
1791 Neil Avenue
Columbus, Ohio 43210

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This set of studies represents a portion of a multi-institutional policy-oriented technology assessment of the socioeconomic and environmental impacts which might result from a proposed increased concentration of energy conversion facilities within the Ohio River Basin.

Utilizing the best available data bases, these studies will attempt to address the broad-scale environmental, institutional, economic and social effects of various future combinations of energy conversion facilities(i.e., coal-based plants producing synthetic fuels, as well as nuclear and coal-fired electric power generating plants) and their required support facilities (i.e., coal mining, processing and transportation; ash and sludge disposal facilities; nuclear fuel and reactor waste transportation facilities; and energy transportation systems, including electrical power transmission systems) that might be built and operated in this region in the future.

The principal objectives of this assessment are (1) to assist in outlining the full range of policy options for dealing with selected kinds of development, alternative levels of development and their possible undesirable effects, and alternative technological levels of environmental controls; and (2) to analyze the probable impacts that would result from implementing each option in its total framework, with special emphasis on the natural environment and its interrelationship with public health and welfare. The full range of primary, secondary, and higher order effects will be considered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
Civil Engineering

SIGNATURE OF PRINCIPAL INVESTIGATOR
Robert C. Stiefel
by Lowell Smith

DATE
July, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☐ NEGOTIATED CONTRACT
☒ RESEARCH GRANT

TASK NO.
5D

PROJECT OFFICER
Lowell Smith

RESPONSIBLE ORGANIZATION
Office of Energy, Minerals and Industry

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$96,867	1976		July 29, 1976	July, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D6-E721-BAZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Lime/Limestone and Advanced Concepts--TVA's 1-MW Pilot Plant (Colbert)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Gerald A. Hollinden, Chemical Engineer, TVA Power Research Staff, 1320 Commerce Union Bank Building, Chattanooga, Tennessee 37401 Telephone: 615/755-3381, FTS/854-3381

Russell F. Robards, Chemical Engineer, TVA Power Research Staff, 1320 Commerce Union Bank Building, Chattanooga, Tennessee 37401 Telephone: 615/755-3381, FTS/854-3381

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Knoxville, Tennessee

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this study are to determine the effects of gas velocity and solid-liquid loadings on mist eliminator performance and to determine the mechanical and chemical methods necessary to maintain continuous reliable operation. The study is to be carried out at TVA's 1-MW lime/limestone scrubbing pilot plant facility located at the Colbert Power Plant. The initial mist eliminator designs are formed from a compilation of data received from previous pilot plant tests at TVA and observations of other research projects throughout the world.

The 1-MW lime/limestone scrubbing pilot plant facility operated during this fiscal year in the effort to develop reliable closed-loop mist eliminator washing techniques for lime/limestone systems where the mist eliminator is positioned in the vertical duct. Systematic operation of a Chevron-type mist eliminator led to a 1000-hour long-term run in the limestone mode and a 560-hour run in the lime mode.

Continuous operation of the Chevron-type mist eliminator, positioned horizontally in a vertical duct, in the limestone system was maintained (after extensive testing) by washing the bottom of the mist eliminator intermittently with all the available clarified liquor immediately followed by an allocated amount of the allowable makeup water. The top of the mist eliminator was washed intermittently with the remaining allocation of allowable makeup water. Continuous mist eliminator performance in the lime system was maintained by washing the bottom of the mist eliminator intermittently with an allocated amount of allowable makeup water. The remainder of the allocated makeup water was used to intermittently wash the top of the mist eliminator.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
9/27/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
AGENCY STAFF (Intramural)
X NEGOTIATED CONTRACT
RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Gerald A. Hollinden, Russell F. Robards

RESPONSIBLE ORGANIZATION
Power Research Staff, TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
0	1976	0	May 7, 1975	December 1, 1976

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)

SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E721-BDU

TITLE OF PROJECT Develop Economic Projection Modeling Capability Necessary to Drive Modular Energy and Environmental Planning Models at a Multicounty Level

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Hubert Hinote, Economist
Division of Navigation Development and Regional Studies
Tennessee Valley Authority
Knoxville, Tennessee 37902
Telephone: 632-2944

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Knoxville, Tennessee 37902

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data.) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

As a part of its ongoing economic research program, TVA is in the process of developing a Regional Economic Simulation Model of the TVA region and its principal subregions. The objectives of the present work are to expand the existing model for use in: (1) assessing an area's sensitivity to various national parameters; (2) evaluating the impact in small areas (economic area or multicounty planning area) on population, labor force, employment, etc. of a major construction activity; e.g., construction of a large nuclear energy plant; and (3) providing the macroeconomic data base at a multicounty level that is necessary for rigorous site specific analyses. Much of the conceptual work has been done, but a significant effort is required to make the model an operational tool for driving energy and environmental planning models. A demonstration of the two sector model (population-labor force and employment sectors) for a multicounty area will be completed by 12/76.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.) None	SIGNATURE OF PRINCIPAL INVESTIGATOR Hubert Hinote	DATE Sept 30, 1976.

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER Hubert Hinote
	AGENCY STAFF (Intramural)	1	RESPONSIBLE ORGANIZATION TVA, Division of Navigation Development and Regional Studies
X	NEGOTIATED CONTRACT		
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$54 K Est. Exp.	1976	3	5/7/75	Phase I Report 3/77- Final 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 764 WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E721-BDV

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Electric Power System Operation and Expansion Environmental Residual Model

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Department - Systems Development Staff, Division of Power Resource Planning, Office of Power
D. H. Walters, Supervisor
Floyd E. Davis, Power Supply Engineer
Mona K. Breaux, Power Supply Analyst

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
216 Power Building
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or [illegible]ress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for those purposes.

1. Objectives - The objective of the project is to determine residual output from an integrated power system.

2. Approach - We are using the model which will be based on a power system simulation, model POWERSYM* developed by TVA, but will be capable of being used with other power system simulation models. It will be capable of predicting the residual output of a power system on a plant-by-plant basis as a function of time and extended over two or more decades. The development is being coordinated with TVA Power Program Integrated Planning Model.

3. Progress - We are using the residuals sulphur dioxide and gross particulates to develop a pilot residual report. Specific emission rates (in lbs. per 10^6 BTU) for sulphur dioxide and particulates for TVA plants under an assumed abatement strategy have been obtained. Programming on the residual model for purposes of producing the pilot residual report has begun.

* A Stochastic Approach To Chronological Short Term Production Costing by Roger A. Babb and R. Taber Jenkins

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR
Floyd E. Davis

DATE
September 24, 1976

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
Dr. D. H. Walters

RESPONSIBLE ORGANIZATION
TVA - Office of Power

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSUMED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
53,000	76	3	5/75	9/1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 26A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D6-E721-BDW

TITLE OF PROJECT Develop and Demonstrate Applications of Computer Graphics to Site-Specific and Regional Integrated Environmental Assessment of Mixed Nuclear, Coal-Based,* *and Hydroelectric Energy Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director, H. R. Hickey, Chief, Applied Research and Education Staff, Division of Environmental Planning, TVA

Principal Investigator, Malcolm Babb, Environmental Engineer, Division of Environmental Planning, TVA

**Myra P. Smith, Research Analyst, Division of Environmental Planning, TVA

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
Division of Environmental Planning
264 401 Building
Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data.) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Output Summary:

The outputs of this project consist of demonstrations of the desirability and practicality of using computer graphic techniques for improving and facilitating the environmental impact assessment of power generating facilities. Current applications include: (a) the use of interactive computer graphics for the analysis of the output of computerized models which predict the dispersion of environmental residuals and (b) the development of a system for processing, analyzing and displaying geographically referenced data for use in power plant site impact assessment. An inventory of computer graphics applications has been prepared. Numerous demonstrations have been implemented. Most of the techniques developed to date have been readily accepted as a means of improving day-to-day assessment activities.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)
N/A

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
9/30/76

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)
☐ AGENCY STAFF (Intramural)
☒ NEGOTIATED CONTRACT
☐ RESEARCH GRANT

TASK NO.
1

PROJECT OFFICER
H. R. Hickey

RESPONSIBLE ORGANIZATION
Division of Environmental Planning - TVA

FUNDS OBLIGATED
$131,000

F.Y.
76

NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.
3

STARTING DATE
6/75

ESTIMATED COMPLETION DATE
5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA
EPA-IAG-D6-E762-BEG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT **Integrated Assessment: Socio-Economic Consequences of Coal and Oil Shale Development**

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Velmar Davis, Deputy Director, Natural Resource Economics Div., Economic Research Service, (ERS) USDA Washington, D.C. 20250 (Project Director); Lloyd Bender, Agricultural Economist, Economic Development Div., ERS, USDA, c/o Dept. of Economics, Montana State University, Bozeman, Mt. 59715; Joseph Barse, Agricultural Economist, Natural Resource Economics Division, ERS, USDA, Washington, D.C. 20250

NAME AND ADDRESS OF APPLICANT INSTITUTION

Economic Research Service
U.S. Department of Agriculture
Washington, D.C. 20250

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives— Describe current resource use in coal and oil shale extraction and assess agricultural economic implications, resource competition and use, resulting from alternative future coal and oil shale development. Estimate impact of energy development in Northern Great Plains on employment, income and population of rural communities and on local government finances and services, including revenue potential. Analyse interrelationships of local government expenditures to employment, population, income, age structure and other socio-economic variables. Evaluate costs of mined land reclamation and uses for land after mining. Evaluate interregional economic implications and trade offs for agricultural and rural areas resulting from coal development. Evaluate effects of increased water demand for coal development on agricultural industries, environmental quality and rural resource use.

(2) Approach—Gather data, describe current situation. Make evaluations for local areas called homogeneous coal producing areas (HPA's), and aggregate these into regions and into an interregional analytical system. System will employ linear, or if appropriate, nonlinear programming under alternative public policy constrains and objective functions to rationalize future or alternative allocation of extractive, reclamation, transportation and energy activities among HPA's and regions.

(3) Progress—Reports in advanced manuscript stage: (a) State taxation of Mineral Deposits and Production; (b) Northern Great Plains Resources and Coal Development.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)* None	SIGNATURE OF PRINCIPAL INVESTIGATOR Velmar W. Davis	DATE 11/22/76

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)* ☒ AGENCY STAFF *(Intramural)* ☒ NEGOTIATED CONTRACT ☐ RESEARCH GRANT	TASK NO. 1-9	PROJECT OFFICER John R. Schaub RESPONSIBLE ORGANIZATION USDA - ERS

unds Estimate* $396,000	F.Y. 76	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y. 2	STARTING DATE 3/76	ESTIMATED COMPLETION DATE June 1979

*Funds approximate not for citation 76 AND SI-SIE 76A WHICH MAY NOT BE USED.